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This year,  
we upgraded  
six products.







# MacUser

June 1993

Volume 9 Number 6

## Cover Story

### 13 Work-Smart Utilities You Can't Live Without

By Gregory Wasson

We present 13 of the best housekeeping utilities available today — tools that find files, find text in files, manage fonts, and make macros — because you have better things to do with your time. .... **84**

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### Writers' Blockbusters By Bob LeVitus

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### MacUser LABS Showstoppers: LCD Panels and Projectors By Shelly Brisbin and Jeff Pittelkau

MacUser Labs screens 20 LCD presentation systems for portability and image quality and discovers that they are an efficient — if pricey — way to show off your work in full-blown color. .... **108**

### MacUser LABS Superfast-Server Secrets

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What's the best way to optimize that super-slo-o-o-w AppleShare file-server system? The answer may surprise you. .... **134**

### MacUser LABS Kodak RFS 2035 Scanner

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Portable but pricey: LCD panels and projectors pack presentation punch.

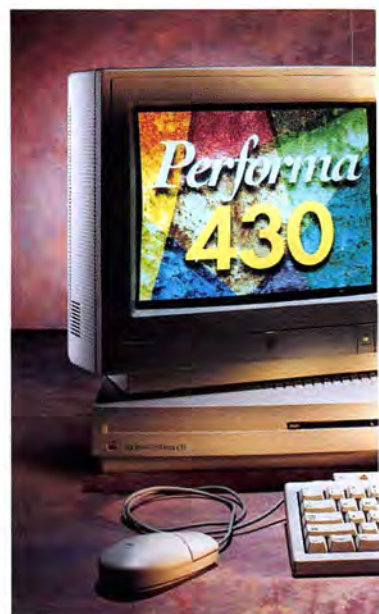


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At your service: Apple's new Workgroup Servers offer options for every kind of network.



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Cover photo by Tom Upton



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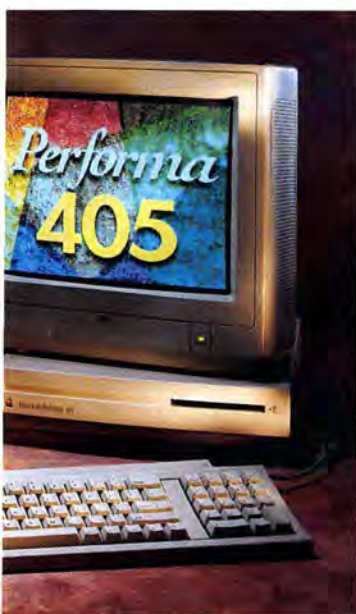
Starting at \$1,299, Apple's new Performa 405, 430, and 450 give home users more value in a single-box package.



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**181**  
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4 June 1993 **MacUser**

# MacUser

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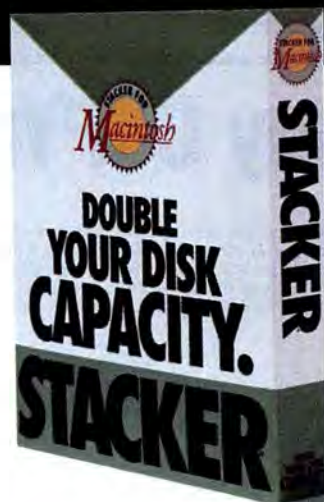
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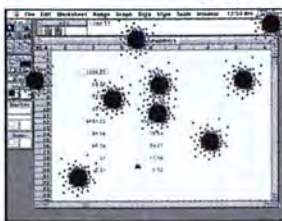
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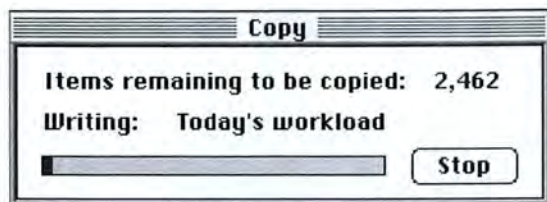
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## About MacUser

### The Plot Thickens

In 1927 you could purchase from L. C. Smith & Corona Typewriters, Inc., a 24-page pamphlet that "reduces the construction of plots to a definite system or formula." Simply by using the Magic Plot Scale to choose your Characters, Things to Be Desired, and Obstacles to Achievements, you could write a sure-fire story.

Sound naive?

Now in 1993, along comes a genre of software that also claims to help you construct that million-dollar plot. After all, there is only a finite number of story ideas, so why not use writing software to incorporate the rules of good writing — from Aristotle's six elements of drama to tips from present-day writing teachers such as John Truby or Sol Stein? And surely it's a great way for a writer to choose characters, conflict, and resolution.

"It sounds good," says *MacUser* associate editor Karen Ohlson, editor of this month's look at the state of the muse (see "Writers' Blockbusters,"

page 94). And, says Karen, some of these writer's aids can force you to ask yourself crucial questions about your story, nudge you around writer's block, and guide your rewriting.

But what's really promising about the best of these programs is their interactive elements, says Karen. Even so, she would like to see the next versions push the technological envelope, "look at what you're doing, ask questions, and give feedback — and I don't know if that's possible."

That's not the state of the art today. Although some of these tools can definitely help writers improve their craft, none of them can make a bad author write a good story. "Stories are about what matters to you," Karen says, "and no amount of trite plots or clichéd twists of fate is going to get you anything beyond a Harlequin romance novel."

But perhaps plot is passé these days. Picking up on the potential of interactivity, Karen says, "Several companies, including Voyager and HyperBole, are involved in creating hyperstories." Often, these programs are nonlinear, with multiple story lines or layers taking place at the same time and different "choice points" so that no two readers experience the story in exactly the same way.

Like the Kurosawa film *Rashomon*, such stories call into question our view of reality. They also call into question all the hoary rules of plot development that are espoused by most creative-writing software. Book publishers as well as movie producers are looking at interactivity as the next wave in storytelling. We eagerly await the first nonlinear Cervantes or Spielberg.

In the meantime, we conclude that the only thing sure-fire in storytelling is that indefinable spark of human creativity.

— Nancy Groth



**Associate editor Karen Ohlson has the write stuff.**



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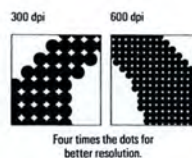
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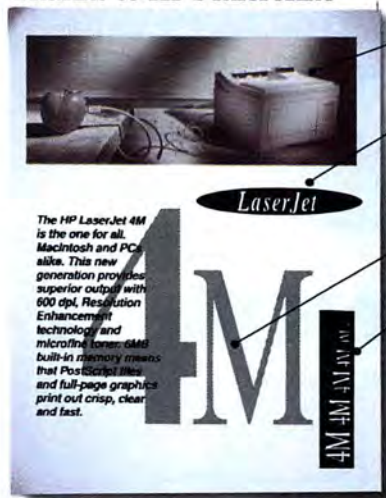
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Of course, with the HP LaserJet 4M printer, you'll enjoy HP's renowned quality and reliability. All for only \$2,399.\* So call 1-800-LASER-JET (1-800-527-3753) Ext. 7340\*\* for print sample† and comparison disk. Or visit your nearest authorized HP dealer.



PostScript and graphics files are rendered faster and more clearly than ever before.

**Greater flexibility.** The HP LaserJet 4M printer also sets new standards in versatility, with a wide range of typefaces and two integrated paper trays. As well as the







## LETTERS

**I**t's a chess problem that even Bobby Fischer or Boris Spassky can't solve. Whenever Don Coulson, of Orange, California, plays Chessmaster 2100, he's plagued with bugs ranging from system-error messages to disappearing cursors to randomly colored screens. "Interestingly enough," Don adds, "these shutdowns never occur when Chessmaster is winning!" Software Toolworks' tech support says that the game is incompatible with System 7. Checkmate, Apple.

Write to Letters to the Editor, c/o MacUser, 950

Tower Lane, 18th Floor, Foster City, CA 94404, or post your letter on the MacUser Forum of ZiffNet/Mac, our on-line service. All

letters become the property of MacUser, and we reserve the right to edit any letters we print. Please include a return address and a daytime phone number.

### Who Ya Gonna Read?

The article on battery conservation ("Taking Charge: PowerBook-Battery Management," February '93, page 194) was very informative, especially regarding the effect of not using system rest (or cycling). I had turned this off some weeks before I read the article, because it was adversely affecting a game I was playing. Several sources, including my user's manual, said that it was not necessary to go back into this hidden dialog box to reactivate system rest, because the machine would default to that setting on the next startup. Your article prompted me to take a look at it, and I found that system rest was still off after dozens of restarts and shutdowns. If you can't trust the manual, whom can you trust?

Lionel Smith  
via ZiffNet/Mac

### Alone in a Crowd

I was delighted to see the extensive PowerBook section in your February '93 issue ("Buyer's Guide: The PowerBook Primer"). Right at the beginning (page 155) of the

nearly 60-page section, Henry Bortman noted that "the PowerBook 100 is still many users' favorite model," adding that it was a "great buy for those who want maximum portability but don't need maximum power." Amen. I was eager to read more.

But that was the last mention of the PowerBook 100 in the entire section! Every article on batteries, peripheral devices, expansion, and usage mentioned the PowerBook 140 and 170 but not a word about our beloved PowerBook 100. Come on, MacUser. Get with it! There are a couple of hundred thousand PowerBook 100 users out there who would love a tip or two on where to get lead-acid batteries or to know whether an internal modem overtaxes the PowerBook 100's power supply. We might have gotten the best bargain in Mac history, but that doesn't mean that we deserve to be ignored.

Kenneth Miller  
Rehoboth, MA

I was very impressed with the PowerBook articles in your February '93 issue, but I was

disappointed that no reference was made to the Outbound Apple-compatible portable computers, of which quite a few have been sold. With the uncertain future of Outbound, it would be nice to see some support for us "orphans" in your magazine.

C. J. Scheiner  
Brooklyn, NY

*The good news is that Apple is turning out new PowerBooks faster than we can write about them. The bad news is that we're going to have a tough time keeping tabs on every discontinued model — portable or desktop. And unfortunately, because Outbound has closed its doors, it's less likely that we'll be able to cover its laptop Mac-alikes. — HB*

### A Touch Off Base?

Ken Gruberman's "Address for Success" (March '93, page 116) errs in its discussion of Dynodex, from Portfolio Systems. The article states, "You can obtain a list of record names by opening the separate Just Names window, but font, size, style, and category selections are not available in either this window or any of

### Dear Mr. Sculley ...

It's about time to retire "The power to be your best," if the mail pouring in in response to February's question is anything to go by. In answer to "What's your idea for Apple's next advertising campaign?" James A. Best, of Winnipeg, Manitoba, Canada, quipped, "Macintosh . . . because you can see right through windows." Perhaps an Apple-labeled bottle of window cleaner is next, followed by a whole line of home-care products.

Another of our friends north of the border had a frostier reply: "This will be the last computer you will ever have to buy!" Of course, I'd settle for "This might very well be the last computer you will ever have to buy!" writes Dawn Bennett, of Petawawa, Ontario. "This revolving door on discontinued computers and near obsolescence has got to stop."

Paul Chato sends this idea for a TV spot, via ZiffNet/Mac: A computer consultant whose job it is to make platform recommendations acknowledges that the Mac is easier to use, set up, network, and so on. "That's why I recommend the PC clone with Windows. I gotta make money off you somehow."

Right, and ad agencies have to make money off clients

somehow. That's why they'd better watch out for Andrew Artero-Boname, of Agana, Guam, who submitted 11 full-blown ad campaigns. After mining some conventional territory — the Garden of Eden ("They say Eve wanted an apple so badly she gave up paradise for it. Today you can have a Macintosh for a lot less. And we'll give you a piece of paradise in the bargain"), puns on Greek ("You might say the Macintosh lets you have your  $\pi$  and eat it too"), and James Bond fantasies (secret agent deflects bullets with his PowerBook) — Andrew gets down to business. How about "It's not a miracle, it's a Macintosh"? Or "Macintosh: The computer that processes tomorrow's ideas today. You'll wish you'd had it yesterday"? Or, stressing the PowerBook's ergonomic benefits: "The Macintosh PowerBook: The computer that rates two thumbs down"? All Andrew wants in return is cash, credit, CPUs, or system software.

Finally, Bruce A. Dath, of El Segundo, California, decided to kill two icons with one stone: "What cute little anthropomorphized spokescreature would I like most to see? How about John C. Dvorak's severed head on a pike."



the predefined printing layouts." Although it is true that these settings are fixed in the Just Names and Data Entry windows, it is false that you cannot change these settings in the printing layouts.

*MacUser* usually goes to great lengths to provide accurate, factual data for comparisons, yet the table on page 120 appears to reflect completely subjective opinions. What constitutes ease of use? How was searching and sorting speed measured? I believe Dynodex is the fastest structured address-book program on the market, and objective data bears this out. The table lists three areas concerned with speed. In all three areas (sort, search, and import) TouchBASE is rated better than or equal to Dynodex. I ran some simple benchmark tests that showed Dynodex 3.0 to be significantly faster than TouchBASE.

I also question some of the subjective ratings in this table. TouchBASE and Dynodex are rated the same for ease of installation, yet Dynodex uses the Apple Installer for easy one-step installation whereas TouchBASE installation is a manual multistep process. TouchBASE is given the edge on ease of sorting, yet its sorting is controlled by a dialog box identical to the one found in Dynodex. A proper feature list would let your readers decide what is important to them. Dynodex 3.0 offers about twice as many features as its closest competitor.

Norm Miller

Technical-Support Representative  
Portfolio Software  
via ZiffNet/Mac

*The reason we took the subjective approach is simple: It's all too easy to be swayed by laundry lists of features and lose sight of important issues such as ease of use, simplicity of learning, and aesthetics. How many of us have purchased software loaded with features, only to find the programs unwieldy, poorly written, or lacking elegance? Because address-book programs are most likely to be used every day, by a wide range of users, the issue of aesthetics is more important than with other kinds of programs. Of course, one person's idea of what looks good may be someone else's travesty, but that's where trust comes in. — KG*

#### Drive My Mac

Brian S. Jones' letter — the one that said that if I can't learn a Mac in an hour, I should lose my driver's license ("Housewares, Lingerie, Macs," February '93,

page 14) — ticked me off! After eight months, a junior-college course, seven MacAcademy tapes, half a dozen self-help books, two dozen software manuals (yes, I do read the manuals), subscriptions to magazines, and about \$12,000 worth of hardware and software, I still panic when I double-click and everything disappears or jams on the screen or my Mac demands a floppy for the umpteenth time. I have a master's degree and two bachelor's degrees, and I've driven formula cars. Can I still keep my driver's license?

Art Hernandez  
Santa Rosa, CA

#### The Human Element

Jon Zilber's comments about the future of the Macintosh and of personal computers ("Verging on Convergence," February '93, page 23) were insightful. I have also noted this "convergence," and I am excitedly waiting to see how and when it will happen. I agree that it will be technologically possible to have an all-in-one computer "boom box," but is it wanted? Do people want one piece of equipment to run their lives? I say no. There must be separate units of technology, or one accident would start a catastrophe. It is vital that we do not become too reliant on machines. After all, they are just machines. There is only one all-inclusive perfect machine — the human being — and it evolved long ago.

Mark D. Bass  
Springfield, MO

#### Villainous Behavior

Why in the world would anyone, save for Apple's highest-ranking executives, label Bill Gates a villain ("Gates," February '93, page 130)? Microsoft Windows for the PC is not just "the biggest challenge the Mac has ever faced," it's the only challenge. A monopoly is the bane of the consumer's wallet and the hallmark of poor quality and service. The copyrighting of the Macintosh operating system was aimed at heading off the competition. With the invention of Windows, Gates has developed the only possible way to compete fairly with the Macintosh, and consumers are competition's biggest winners.

Let's keep Apple on its toes and continue to demand reasonable prices for products and services. Mac prices are dropping, but the cost of comparable PC lines continues to drop as well — the cost

of a PC is at least half, if not less than half, that of a Mac. Hats off to Mr. Gates — and to competition.

Joseph W. Duhamel  
Brewster, NY

#### It's in Canada, Eh?

In your editorial response to the letter "Time Is on Their Side" (February '93, page 18), you state that the Mac IIvi is available only in Europe. In fact, the IIvi is alive and well here in Canada. We have yet to be extended an invitation to join the European Community, and if the signing of the recent North American Free Trade Agreement is any indication, we will not be deserting North America in the foreseeable future!

Prashant Joshi  
Scarborough, ON  
Canada

#### Check It Out

Your review of Aatrix's CheckWriter 4/0 (March '93, page 85) neglected to mention the tremendous savings that CheckWriter offers users. CheckWriter is the only personal finance application that lets users use checks from their personal checkbook rather than ordering expensive tractor-fed or laser-printer checks such as those required by Quicken and Managing Your Money.

Your article also excluded features unique to CheckWriter such as automatic service and interest charges, an address database, and the ability to laser-print checks on plain paper. Last, your article pointed to shortcomings in the interface and manual. In February, we shipped CheckWriter Pro, which includes a major reconstruction of the interface as well as a new manual.

Steven H. N. Lunseth  
President  
Aatrix Software  
Grand Forks, ND

#### Of Mice and Menus

I've just finished looking at "The MacUser 1500" (1993 special issue), and it sums up in 350 pages why I've decided not to renew my subscription to your magazine: The product reviews you publish are meaningless!

For example, of all the products listed under the general heading of graphics-related software, 76 percent scored 3.5 mice or better on your scale! Sound fishy to you? It gets worse. Of the 41 products (24 percent) that received 3 mice or less,



# WE'VE JUST LAPPED CLARIS.®

Canvas™ has never been shy about its reputation for running circles around MacDraw® Pro. But even we are stunned by just how wide the performance gap has grown. Over the last couple years, while the competition's been idling, Canvas has been pouring it on. Winning converts by the thousand. And accumulating a trophy case full of top industry awards, including two MacUser 5-Mice Ratings (no other drawing program's received even one). **O**ne look at the feature differences, and you'll understand why. Canvas offers vastly more powerful text handling tools like binding to curves, shape wrapping, full kerning control, and font-to-Bézier conversion. Unrivalled technical drawing features like auto dimensioning, parallel lines and curves, and a SmartMouse™ drawing aid. Plus sophisticated design/illustration capabilities, including object combinations and object blends. **B**est of all, only Canvas is self-upgrading. Our exclusive Open Architecture allows you to totally customize your work environment — turning existing tools on and off at will, and “plugging in” a steady stream of brand new ones (like our red-hot Design, Imaging, and Utility ToolPAKS™) by simply dragging them into a designated folder. Here's what MacWeek had to say about this feature in their January '93 review of Canvas: “Being able to add more than 40 tools to a program simply by copying files into a folder adds remarkable power to that program. In Canvas' case, it reinforces its position as the best object-oriented drawing program money can buy.” **S**o if you're on the fence about which program to buy, or tired of being stuck in low gear with the one you bought, just get ahold of Canvas. And you'll never look back.

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# AGAIN.



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none of them received just 1 mouse and a mere 7 percent of the total received fewer than 3 mice. Are we to believe that three-quarters of the products you review are better (or much better) than average? Does this mean that none of the products you review are lousy?

Jim Little  
Denver, CO

*No, it means that we can't review in print every single product on the market. Those products that deserve fewer than 3 mice usually don't make it into the magazine. When you do read about a product that receives a low mouse rating, it's because we think that the product is significant enough that many users will be interested in its shortcomings as well as in its virtues. — PP*

## Vintage Whine

I've been reading your Letters column for years, and every month it's the same old thing: letters from readers whining about the perceived shabby treatment they've been getting from Apple. "It costs

too much"; "System 7 uses too much memory"; "I just bought my computer, and they came out with a better one at a lower price"; "My old software doesn't run on my new computer." Poor baby! Did mean old Mr. Technology treat you badly? Here you go, honey, wipe your nose now!

My response is, What are you complaining about? Technology is zooming forward at a pace that keeps us gasping for breath, giving us undreamed-of performance and capabilities at falling prices. My new Quadra cost me less than my SE did. For this I should be resentful? What do you suggest Apple do now that you've bought your LC II? Freeze product development for five years so you won't be offended? Some of your software won't run on your new machine? Do you have enough RAM? Have you tried contacting software publishers? I did, and quite a few of them sent me free updates.

Please tell those complainers to wake up and appreciate the great deal they have been getting from Apple, or let them be

forever banished to that mournful abyss known as DOS!

Jon Gaines  
Rochester, NY

## Don't Sit Too Close

In your recent monitor-test article ("Setting the New Standard: 16-Inch Color Monitors," January '93, page 104), I saw not one word concerning whether any of the monitors met the Swedish MPR II standard for monitor emissions, even though it seems that at every opportunity *MacUser* described its elaborate, fair, and extensive laboratory facilities and procedures. I also note that *MacUser* hard-drive tests never mention noise levels. Your readers are not all technicians but real people with real concerns, especially when we or our children spend hours in front of our machines. Comfort and safety are valid considerations.

George Istvan  
Concord, CA

*The Swedish MPR II standard, as defined by that country's Mät och Provrädet*

# WHEN COLOR CONSISTENCY

Original  
Input



Printer  
Output



(Measurement and Testing) board, sets stringent levels for magnetic- and electric-field emission. Because what constitutes dangerous levels for monitor emissions is not yet clear, MPR II has not been adopted in this country. But in response to reader interest, we'll begin tracking MPR II compliance in monitor labs (as soon as our Combinova meters arrive!) as well as measuring noise levels in carefully controlled test chambers for future labs where appropriate. — PP

### Photo CD Simplified

A point made in the lab report "Passport to the Future: CD-ROM Drives" (March '93, page 124) about Photo CD access on CD-ROM drives needs some clarification.

Any CD-ROM drive (PC or Mac) that is XA-compatible can, in theory, read Photo CD discs. However, not all Macintosh CD-ROM-drive manufacturers bundle Photo CD-capable drivers with their drives.

For instance, your report lists the CD

Technology CD Porta-Drive as "not Photo CD-compatible." Not true! The CD Porta-Drive is XA-compatible, so it can read Photo CD discs if you have driver software that supports the Photo CD format. Although the driver that CD Technology bundles with its drive does not read the Photo CD format, Trantor Systems [Fremont, California: 510-770-1400] makes a "universal" driver that works with the Porta-Drive and does access Photo CD discs. Some of the other drives you list as "not Photo CD-compatible" might be XA-compatible drives also.

Gib Veconi  
via ZiffNet/Mac

*It is true that XA-compatible drives can "in theory" read at least the first session of a Photo CD disc. But because we reviewed the CD-ROM-drive package as a whole, not just the drive mechanism, we considered products that ship without the appropriate Photo CD driver as not being Photo CD-compatible. That being said, CD-ROM technology is moving rapidly ahead and many of the drives that*

*were not Photo CD-compatible at press time can now read full multisession discs. For more information on Photo CD and compatible hardware and software, see "Photo CD: The Big Picture" (May '93, page 177). — JR*

### Dust Off That Software!

I was saddened to read about all the hardware and software gathering dust on shelves around the country ("Dear Mr. Sculley," January '93, page 13): FullWrite Pro, Microsoft Works, QuickKeys 2, even a hard drive for a Mac 512Ke. All these have the potential for second lives; old technology need not collect dust. Instead, please recycle it at the nearest Mac-equipped public school. Because Pluses and 512Ks make up the bulk of the Macs at our school, we don't think too much about the latest color whizbang programs. We would be happy to add to our dated collection if any MacUser readers would like to make a donation. One caveat: Many software licenses prevent the purchaser from transferring ownership of an older

# HANGS IN THE BALANCE.

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*Even visionaries need to see reality*



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version after upgrading to the latest version of a program. Please check your copyright agreements before rushing to the post office.

Lawrence Bickford  
Computer Coordinator  
Hopkinton High School  
Contoocook, NH

*Check with nonprofit organizations as well as with your local school district. Your castoffs can be another person's treasure. — PP*

## Crash and Burn

In "Surviving a Crash Crunch" (February '93, page 362), John C. Dvorak initially complains that his old Macintosh software is not compatible with System 7 and hints at a possible Apple conspiracy to force people to upgrade their software. He should have known that if developers follow Apple Programming Guidelines, their software will most likely work on every system. Also, unlike with DOS, the Macintosh can support as many monitors as you have video cards for and each

monitor can be set to a different color depth — hence the need for switching colors via the Monitors control panel. From my experience, the only programs that stop and tell you to change the color depth are games. Dvorak must be unhappy at having to switch color depth during his playtime.

Steven Nygard  
St. Paul, MN

## Reformat Dvorak?

Dvorak is a Mac curse, a crashed hard drive that won't reformat. Spare us your juvenile trips into fantasy, Dvorak. Try sparking the folks at Apple into supporting the Mac community better, like most Mac users do. Tackle problems that address trends such as Apple's current push to produce Macs as if they were cars — new shells and the same old internal limitations. Do us and yourself a favor: Put the accolades you have garnered to better use and stop whining.

John M. Healey  
Oceanside, CA

What is the rationale behind keeping Dvorak? Do you really think that we, the readership, enjoy seeing precious column inches wasted on this Bob Greene of the computer world? Do you tally the complaints and pat yourselves on the collective back, saying, "Golly, guys, we've got a live one with this Dvorak fella! Lookit all these angry readers! Guess he's getting some danders up!" If this is your rationale, please reconsider. Some of us *must* be writing in because we like the magazine and are genuinely disgusted with this particular albatross you insist on wearing around your neck.

I applaud you for having an iconoclast on your staff. But perhaps there has been some misunderstanding? *Iconoclast* derives its meaning from the smashing of idols and graven images, not from scribbling fluff. When Moses saw his people worshipping a golden image, he didn't whine or suggest inane alternatives: He took simple and direct action.

Brendan Baber  
Chicago, IL

# On The Other Hand, There's Relisys!

Apple  
14" Color  
Monitor



Relisys VividVIEW 14  
14" Color  
Monitor



You've got to hand it to Relisys. They keep making high-quality monitors with extremely affordable price tags. Need an example? Take the two monitors pictured above. Both are color monitors with very similar features. However, the Relisys VividVIEW 14 sells for about \$200 less than the Apple monitor.

That's what's known as a *big difference* in today's Mac market.

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Dot Pitch	0.28 mm	0.26 mm
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Resolution	640 x 480	640 x 480
Non-Glare Screen	Yes	No
Control Nobs	5	2

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### The Yugo Computer

I look to *MacUser* for the latest information about the Mac, which I've had to use in a never-ending battle with PC users who think Microsoft (read "Windows") invented computing. I have won at least one fight, resulting in a Quadra 700 on my desk, but the battle continues.

The most oft-lobbed volley is, "You can buy a PC for \$1,000, so why spend all that money on a Mac?" I retort that you can also buy a Yugo for a bargain price but that doesn't make it a good car. Sure, my Quadra cost \$5,000, but by the time PC users get done retrofitting their Compaq and IBM computers with sound cards, network cards, and software and then add the operating system and environment, they've spent more money for an inferior product.

Your mission, should you accept it, is to run benchmark tests comparing a full range of Macs and DOS-based PCs — for example, Mac Classic versus \$1,000 PC, Mac IIsi versus comparable PC, Mac IIfx versus 386, Mac Quadra 700 versus 486,

and Mac Quadra 950 versus Compaq System Pro.

You'll need to quantify some things to get to a bottom-line performance matchup — MIPS or timing or both a Mac and a PC performing the same task — but it would be nice to know "relative horsepower ratings." Factor in 16-bit DOS versus the 32-bit Mac OS. Then start adding things to the PCs — sound cards, network cards, Windows, networking software, and

so on — to get to the real bottom-line price of a comparable PC and Mac. Add in the future power and forward/backward compatibility of PowerPC and the fact that an ancient Mac Plus can still run today's software, and it seems logical to me that the PC would cost more, do less, and be less integrated and user-friendly than a Macintosh.

Rich Lapka  
Chicago, IL

### Corrections

In our review of Symantec AntiVirus for Macintosh 3.5 in the April '93 issue (page 91), we stated that you must leave SAM Virus Clinic running in order to automatically scan for viruses. In fact, SAM Intercept control panel can start Virus Clinic as needed to run scheduled scans. For this reason, the mouse rating of SAM 3.5 should be ~~4~~4½.

Our review of VideoFusion in the April '93 issue (page 59) incorrectly listed the company's phone number; VideoFusion's number is 419-891-1090.

In the Product Directory for "The 8th Annual Editors' Choice Awards" (March '93), we listed an old address and phone number for Storm Technology (page 105). The new contact information for the company is Storm Technology, Inc., 1861 Landings Drive, Mountain View, CA 94043; 415-691-6600.

The phone numbers listed for Manhattan Graphics (March '93, page 163) should have been 800-572-6533 or 914-725-2048. The number given in the article is the company's fax number.

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# Read my

## THE BOTTOM LINE

The HP ScanJet IIc sets a new standard for affordable color scanners. Its engine is fast and well-engineered, and HP's innovative color-calibration software makes hassle-free, "true"-color scans a reality. Prices at less than \$2,000, the HP ScanJet IIc is a best buy in its class.

## It's blazingly

The HP ScanJet IIc uses a one-pass scanning method that makes it one of the fastest color scanners we've seen. It also provides time-saving color previews that dynamically display any changes you make to the scan, such as exposure, hue, and saturation modification.

HP combines its excellent color-calibration technology with one of the best scanning engines we've seen. Our tests for resolution, consistent tracking of the scan head, and color accuracy showed the HP ScanJet IIc to be a top performer. In addition

TOP-NOTCH HARDWARE TEAMED WITH INNOVATIVE SOFTWARE MAKES HP'S NEW COLOR SCANNER A WINNER.

Hewlett-Packard's ScanJet IIc sets a new standard for affordable desktop gray-scale scanners. From

## 1992 Diamond Awards

For an all-around scanner offering high-quality color and black-and-white images, true 400-dpi resolution, and good basic scanning software, HP's ScanJet IIc can't be beat.

Top honors in every s

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# clips.

fast!

and Black-and-White...  
ScanJet IIP is an exceptional  
product. The scanner is just 16  
inches long by 11 inches wide by 4 inches high.

## WINNING COMBINATION

To test the HP ScanJet IIC, we used the same set of tests we used for our most recent color-scanner lab report. The results showed HP's new scanner to be the best in its class in both hardware and software. The ScanJet impresses, from the moment you open the box. Other

scanners use a removable screw that locks the scan head for shipping, but HP uses a locking lever that's built into the scanner itself. There's no screw to lose, and the lever is so easy to use that you'll find yourself locking the scan head more often, thereby increasing its life span.

anner category.

sed...



HP ScanJet IIC



HP ScanJet IIP

We'd hate to brag. So we'll let the Mac press do it for us.

*Macworld* awarded both the HP ScanJet IIC and IIP their *World Class Award*, and named the HP ScanJet IIC as the *Best Color Scanner* for 1992, and the HP ScanJet IIP as the *Best Black & White/Gray-Scale Scanner*. While *MacWeek* gave their prestigious *Diamond Award* to the HP ScanJet IIC.

Speed. Simplicity. And accuracy were all applauded. It's no wonder. HP's single-pass scanning delivers both lightning-fast speed and precise color registration. TWAIN support allows scanning without having to switch between applications. And HP AccuPage technology with 400-dpi resolution can tackle the toughest OCR challenges. What's more, capabilities this advanced have never been this affordable. List price on the HP ScanJet IIC is just \$1,599. The HP ScanJet IIP is just \$879. And right now, the HP ScanJet IIC includes Adobe™ Photoshop LE.

Impressed? Don't just take our word for it, or even the Mac press's. Attend one of our scanning seminars that will be held April through September, 1993. To find out more about the HP ScanJet IIC and IIP or seminars in your area, call 1-800-SCANJET, Ext. 7364.\* And judge for yourself.



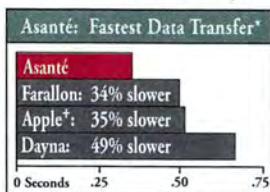
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\*32K file transfer between a Quadra 950 and Quadra 700. Source: Recommended Test Labs, Inc. 1993. Call Asanté for complete report.

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Apple CPU	Asanté Solution
PowerBook 165c	Mini EN/SC
Mac LC III	MacCon+ LC III
Centris 610 & 650 Quadra 800	FriendlyNet Media Adapters

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**CIRCLE 86 ON READER SERVICE CARD.**



# Apple, from A to Zeos



**For those who are having trouble keeping up with Apple, here's an alphabetical cheat sheet of the top 26 trends that will shape the future of the Mac.**

**A** is for **apple**, the symbol of the education market that Apple could easily regain by adopting an aggressive trade-in program for Apple II computers (see **T**).

**B** is for **billionaire bachelor Bill**, whose recent engagement sent shock waves through the industry — half of which breathed a sigh of relief, anticipating that family obligations will slow down the Microsoft juggernaut, and the other half of which panicked at the prospect of a dynasty of mini-Gateses.

**C** is for **color**. Apple gets a thumbs up for the affordable Color Classic but a thumbs down for the color PowerBook 165c, whose image quality lags behind that of top-notch color PC notebooks (such as IBM's color ThinkPad).

**D** is for **docking**. Apple is likely to hold on to its lead as an innovator in dockable notebooks, thanks to its unique stature as the only computer manufacturer that controls both the operating system and the hardware for its computing platform.

**E** is for **everywhere, anytime computing**. The combination of miniaturization and wireless communications drives the next generation of computing devices off the desktop and into your briefcase, into your pocket, or onto your wrist.

**F** is for **form factor**. Because of Apple's isolation as the only vendor of Mac-compatible hardware, its limited resources force it to skip roughly every other generation in the ongoing development of new form factors for computers, a limitation that could lose it customers. For example, while focusing on developing palmtops, such as the Newton, Apple sat out a round while the PC industry introduced a slew of subnotebooks, such as the 4-pound Zeos Contenda (on which this column was written). With familiar file-compatible Windows applications for the kinds of things most people want to do on a portable machine (word processing, spreadsheets, E-mail, presentations), the fact that the Contenda doesn't run the Mac operating system is less important than the convenience of having a machine roughly half the size of a PowerBook.

**G** is for the **Gee-whiz!** factor that once accompanied every new Mac product release. But with the current high-paced churning of Apple's product line, not every new machine garners that kind of response (see **S**). The Gee-whiz! reaction is now often replaced by

the Cheez Whiz response: It might be cheaper, but Camembert it ain't.

**H** is for **Heisenberg's uncertainty principle**, a law of atomic physics that states that either an entity's position or its motion — but not both simultaneously — can be observed, a phenomenon that also applies to trying to fathom Apple's long-term product strategies.

**I** is for **interface and industrial design**. Is Apple a hardware company or a software company? It's neither — it's an interface company with impeccably designed hardware. The Mac's interface — especially the guidelines that ensure consistency among third-party software products — is what keeps the Mac ahead of Windows (but see **L** and **V**). If Apple truly understood that its interface expertise was its most valuable asset, it would form a business unit to leverage that asset beyond the computer industry, providing interface and industrial-design services to everyone from General Motors to Black & Decker.

**J** is for **just-in-time manufacturing**. Apple must learn how to avoid the ongoing cycle of boom and bust and backlog every time it produces a hit product.

**K** is for **killer app**. It's been years since a piece of software has had the impact of Lotus 1-2-3, PageMaker, or Photoshop. There's got to be *something* new under the sun besides After Dark.

**L** is for **litigiousness**, a mind set that has consistently backfired on Apple. Focusing attention on the possibly illegal similarities between Windows and the Mac operating system, for example, only served to legitimize Windows as an acceptable GUI alternative in the minds of undecided customers.

**M** is for **music**, a market where the litigious shoe was on the other foot. Apple dominated this market until it began a successful plan of diligently avoiding selling products to musicians while awaiting the outcome of a lawsuit from the holding company for The Beatles (from whom Apple had licensed its corporate name, with the caveat that it not sell music-oriented products that could lessen the trademark value of the defunct record label).

**N** is for **Newton**. **N** is also for **not yet**. **N** is also for **never-never land**. Coincidence? **Nyet**.

**O** is for **other people's money**, as in the form of currency Wall Street investors prefer



to spend — or the attraction Apple saw when partnering with IBM to develop Taligent and the PowerPC.

Nope, **P** isn't for **PowerPC**, Apple's response to Intel's powerful **Pentium** processor (neither of which will be widely

deployed for at least a year). Right now, **P** is for **PCMCIA**, the credit-card-sized expansion slot for swapping in and out everything from modems to storage devices to network adapters that's sweeping the PC industry. Apple has yet to

adopt PCMCIA, although some vendors (such as Applied Engineering) are finding innovative uses for it.

**Q** is for **Quark**, the Ferengi barkeeper in "Deep Space Nine," whose Machiavellian business demeanor echoes Apple's relationships with its third-party developers.

**R** is for "real soon now," Apple's stock reply to questions about the Newton, Taligent, and the PowerPC.

**Apple's Star Trek OS**  
**will boldly go where**  
**nearly everybody's**  
**gone before.**

**S** is for **server**. Although Apple's new servers may prove useful for all-Mac networks as an alternative to Novell's NetWare, they're barely baby steps toward making Apple a significant player in the enterprise market (see **W**).

**T** is for the **Tooth Fairy School of Marketing**, whereby your barely used old equipment nets you only about 25¢ in the marketplace, and — absent any trade-in program — you're expected to come up with the replacement on your own.

**U** is for **ubiquitous microprocessor support**. Although lagging behind NeXT and Sun in the race to port operating systems to run on the dominant Intel x86 architecture, Apple is rumored to be preparing a version of the Mac OS — code-named **Star Trek** — to boldly go where practically everybody else has already gone before.

**V** is for **voodoo interface**, as exemplified by Apple's continuing belief that dragging something into the Trash can either mean destroy it (a file), safely store it (a floppy), or disconnect it (a network connection).

**W** is for **Windows**, whose installed base now overshadows the Mac's, but it's also for **would-you-believe Wang**, the troubled former computer giant Apple might well want to consider acquiring to boost its penetration into the enterprise-computing market.

**X** is for **xtinction**, a fate the PowerBook just may have helped Apple avoid.

**Y** is for **yo-yoing stock prices**, a factor that all too often drives Apple's product and pricing plans.

**Z** is for **zat's all, folks.** ☞

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Of course, even Public Utilities can't prevent people from deleting files or reformatting their hard disks.

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That's because we left out Sector Editors and other such high end, high risk things. And put in plenty of on-line, System 7 savvy HELP.

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Public Utilities has discovered a problem on the disk "HD." The Volume Bitmap is incorrect. We suggest you fix this.

Don't Fix

Fix Now

running, you have to spend a lot of time waiting by the side of the road.

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# Selling Your Mac



**Here's how to get the most money for that old Mac of yours — assuming it makes sense to sell it at all.**

**H**ere in the '90s, when major tattooed TV celebrities hawk psychic consultations with the Magic Eight Ball, it's hard not to conclude that the time is ripe to test out the old saw concerning consumers of limited acumen and the timely disbursement of their liquid assets. Besides, isn't all that old, unused Mac equipment blocking the fire exits in your home or office?

Unfortunately, getting rid of an old Mac isn't quite as easy as getting someone to shell out eight bucks for the life-changing psychic advice "Situation unclear . . . try again later." Then again, you might be able to exchange that old wreck for four days and three nights at Disneyworld (off-peak, mind you), so it's at least worth looking into.

## **Taking Stock**

Foremost in your mind is, of course, what you can hope to get for your old platinum pal. Sorry, but it's not a lot. Once you've told your spouse how much you were able to get for the Mac you bought instead of a new hot-water heater for the house, well, that rather tart "I told you so" he or she has been saving up won't be far behind, accompanied by loose analogies to cows and magic beans.

Actually, devaluation of computer equipment has been fairly consistent over the years. Generally, a new Mac loses 25 percent of its value (based on list price) once it's taken out of its box; it loses 10 to 20 percent more on its first birthday, and then it loses about 5 to 10 percent each year thereafter. If Apple stopped manufacturing the model more than six months ago, take off another 10 to 20 percent. So, if you paid \$5,000 for a basic IIfx system (CPU, monitor, keyboard, mouse) in 1990, you can probably expect to get \$2,600 or so for it today as a private seller.

This is, of course, just a rule of thumb based on the past few years of used-Mac sales, but it holds up well. And do keep in mind that once a Mac's value starts to dive, it keeps plummeting; a Mac Plus (by no means an obsolete machine) that originally sold for a couple thousand dollars commands all of \$250 on the used-computer market today.

"But, Andy!" you're probably sputtering, visions of denial of spousal favors dancing in your head. "I have hundreds if not thousands of dollars' worth of software too!" Well, say it, don't spray it, Binky. Unfortunately, commercial software probably won't boost the selling price by much. Most buyers would

turn down a used system that came with \$1,500 worth of software (only four or five business programs, really) if they could buy an identical system without software for \$500 less. Software acts more as a sweetener. Using semioctopus peripherals such as CD-ROM drives, scanners, and expensive laser printers to boost your selling price is also a losing proposition. You'll probably reap more bucks by breaking off the scanner and printer and selling them separately.

## **Marketplaces**

Fortunately, all the best methods for selling your used equipment are free or won't cost you a thing unless you actually sell that albatross. In increasing order of ease of sale:

**Commercial Dealers.** By far the most hassle-free way to unload a system is to go to a commercial dealer of used Macs. Pre-Owned Electronics, of Waltham, Massachusetts (800-274-5343 or 617-275-4600), and Shreve Systems, of Shreveport, Louisiana (800-227-3971 or 318-424-9777), are two of the oldest such companies. They and their ilk are great in that you can make one phone call and get a check a week later that almost certainly won't bounce. As you might guess, though, they don't pay top dollar. It can also be a minor pain to package and ship an entire system to their intergalactic HQs. But hey, it costs nothing to call them for a quote.

Many large cities have a consignment shop for used computers hidden away somewhere. These stores have all the advantages of a commercial dealer (secure payment, and you don't have to field calls from interested buyers) but let you set your prices. On the minus side, they tend to charge hefty commissions.

**User-Group Meetings.** A well-attended user-group meeting provides an unusually attractive opportunity: a room packed with people who are into Macs and know more of the same, so during the part of the meeting where people announce things they want to buy or sell, you've got a well-lubricated audience. It's also absolutely free. Only a slight disadvantage: Most of these people are savvy, so you won't be able to fleece 'em as you could the average street pigeon.

**Electronic Services.** They're similar to user-group meetings — your ad will be seen by exactly the group of people you want. Stick to local bulletin boards, though. National services such as CompuServe have areas for posting free ads, but the number of





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MacUser 4/91

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## ANDY IHNATKO

people who go there to buy are woefully outnumbered by the people with stuff to sell. Sort of like those three-dollar-a-minute party chat lines that feature the conversations of a couple dozen guys asking if there are any women on the line. You also have to worry about shipping your whole system cross-country and hoping that it arrives in one piece.

**Want-Ad Magazines.** Unlike newspaper want ads, which are next to useless, newsprint magazines dedicated to want ads are purchased by folks who are actually interested in buying stuff. Also, they usually run your ad for free for however long it takes to sell your stuff, and then charge you a modest fee.

### Reeling Them In

Now comes the distasteful part: dealing with the motley riffraff who respond to your ads. This is tricky because unless you live in Mayberry or some other such town in mid-'60s sitcomland, you have to allow for the possibility that the potential buyer is more like Eddie Haskell than like Ward Cleaver.

So first of all, choose your meeting place carefully. The best location is neutral territory, such as the offices of your local user group or a meeting room in a public library. If you have to bring the buyer to your house, though, take precautions. Arrange the meeting in the morning or early afternoon, and make sure there are other folks in your house. And set up the Mac and everything you're selling with it in the room closest to your front door, so the buyer won't have the run of the house.

Other preparations: Clean your Mac and peripherals thoroughly. Use a Brillo pad to get rid of the years of grime on the case, and then crack it open and use your vacuum cleaner's brush attachment to mop up all the dust and whatnot from the internal components. Be sure to wipe the hard disk of any software you don't own. Your best bet is to reformat the hard disk and reinstall the system software and all of your legally owned software. Not only does this prevent the unsightly buildup of bad karma but it also quashes any subtle problems that might cause an untimely system crash, which could certainly put the kibosh on the deal.

When the buyer arrives, well, logic takes over. Don't tell any half-truths; just demo your system with as much honesty as you can muster. You don't have to volunteer that your hard drive

crashed a month ago, but do keep in mind that any lies you offer or valuable truths you withhold may result in an unpleasant interlude days or weeks later.

If the buyer bites, great. At this point, a checkbook may be produced and you'll wish you had said up front that you wanted cash or a certified check, so work out payment details before the buyer sets foot in your house. And if the buyer agrees to a secure form of payment, ask for it up front. Sometimes buyers will tie people up for the better part of an hour and then, when the deal's done, ask if they'll take \$700 less because — oh dear — that's all they seem to have brought with them. If the buyer is paying by check, take normal precautions: Ask to see a valid driver's license, and write the license number on the check for an added dose of protection.

Be sure to write up a proper receipt, noting the system, configuration, components, condition, purchase price, and warranty (none). It's in your best interest to write down, "The system is provided As Is," and it's a friendly (though vaguely risky) gesture to give the buyer 24 hours to back out of the deal and return the system in the same condition. Just be sure to put everything in writing and that each of you has a signed copy before you go your separate ways.

Finally, it's a good idea to help the buyer carry everything to the car. It's another friendly gesture, and just as important, it allows you to surreptitiously jot down the car's license-plate number. This is the '90s, after all.

### Is It Worth It?

Selling a Mac is a big pain in the rear end, so you ought to consider the alternatives. I mean, if you've already absorbed the cost of the machine, why not hold on to it? There's tremendous power in having a second Mac for *true* multitasking ("Oh, that's my Pax Imperia server"), and it's insurance against being stranded if your main ax does the big firework. And if you close your eyes and throw a dart out the window, you're sure to hit a church, public library, or school that wouldn't mind a free working Mac. I'd explain how to depreciate your hardware as a juicy tax deduction, but I've been talking to the IRS for the past 50 minutes about this, and with my last remaining strength, I can only refer you to IRS Publication 544 before I breathe my last. ☹



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# Blood from a Clone



**It was supposed to be impossible to clone a Mac. But now that NuTek's done it, Apple's got an entirely new threat to worry about.**

**A**pple's been saying it can't be done," Benjamin Chou says. "We just proved it can."

What Apple says can't be done is to make a computer that (1) contains no parts from Apple and (2) runs Mac software without infringing on Apple's copyrights. But Chou has made such a computer. If, as he claims, he's managed to do it without breaking any laws, he will have changed the face of Macintosh computing.

Chou's NuTek U.S.A. is now shipping an \$899 product comprising a motherboard and system software that resellers can use to construct Mac-compatible computers. In addition, NuTek is selling the NuTek Duet, a dual-processor computer system that can run DOS/Windows applications on its Intel 80486 processor and Mac applications on its Motorola 68030 processor — at the same time. NuTek developed these products by using elaborate procedures to thwart possible charges of code-copyright infringement. To avoid copying any protected aspects of Apple's user interface, the NuTek machines use the OSF/Motif graphical user interface.

What does all this mean for Mac users?

The first clones to hit the PC world sparked a price war. When IBM introduced its PC in 1981, entry-level PC pricing was comparable to Apple's: not bargain-basement. By mid-1984, with serious PC-clone companies such as Compaq breathing down its neck, IBM cut prices across the entire line, and fierce price competition has been the rule in the PC market ever since.

Analysts were quick to draw the obvious parallels when NuTek announced its breakthrough. Three technological developments made the PC-compatibles market blossom: Phoenix Technologies cloned crucial IBM ROM code, Chips & Technologies cloned the IBM hardware architecture, and Microsoft made the MS-DOS operating system available to all comers. NuTek is single-handedly delivering the equivalent of all three for the new Mac-compatibles market. No wonder the pundits now hail NuTek as the first Mac-clone creator.

But the pundits are wrong. Cheap? Selling a board to resellers for \$899 won't force Apple to cut prices and certainly won't produce the \$600 Macintosh clone that everyone has always dreamed of. True clones? Wrong again. Unlike IBM, Apple owns its operating system. This means that a NuTek-

based machine can never be a clone — a 100-percent Mac-compatible. NuTek must certify the compatibility of each application, and there will always be some applications it cannot certify. At the moment, one of those applications just happens to be Microsoft Excel. Imagine how history would have been different if Compaq's first PC-compatible hadn't run Lotus 1-2-3.

In traditional Mac markets, therefore, Apple will clobber NuTek-based compatibles on the issue of compatibility and almost certainly on performance. That leaves only price, and unless NuTek and its reseller customers can manage to deliver that \$600 Macintosh-compatible, they'll have to seek new markets. And they won't have far to look.


## **The Hermaphroditic Computer**

Thanks to fierce price competition, PC manufacturers and resellers are desperate for some way to distinguish their systems from the crowd. The ability to run Mac software is certainly one way. NuTek's Duet — a heavy-weight 80486 machine that sells for \$2,993 and just happens to run Mac software too — ought to appeal to businesses that are committed to the PC platform but want to run one or two Mac applications.

For NuTek and its reseller customers, this represents a huge market. They will pursue it, and if they're successful, they'll make Apple hurt. All of Apple's efforts in corporate computerdom to date have achieved this much: Most businesses have chosen to be PC-based but want some Mac capability. A machine such as the Duet confirms their choice and gives them that limited Mac capability. It says, "You were right all along; the Mac is a specialty machine for desktop publishing and you can get that Mac capability on this PC." This will not sit well with Apple.

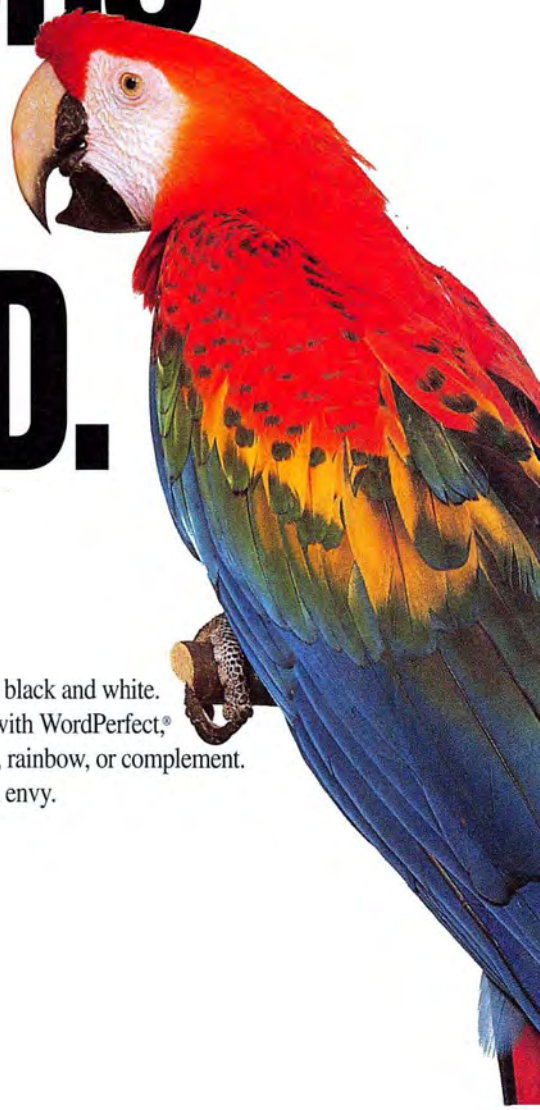
Will Apple sue NuTek? History says yes. Ironically, Apple might do NuTek more harm if it refrains. My guess is that Apple would lose the suit, legitimizing NuTek. And without a legitimizing lawsuit, might resellers be leery of doing business with NuTek?

"That's possible," Chou says. "Absolutely. But not all companies think that way. We're getting a lot of interest."

Indeed. Whether it spawns a generation of cheap Mac-compatibles, moves Mac applications onto desktops Apple can't reach, or inspires a Macintosh-defining lawsuit, NuTek spells trouble for Apple. 



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## P L A N N E D   G R O W T H

To Matthew Long, a just 40-year-old man, his beloved hometown of Elms, Plains, has had a severe housing shortage ever since the big professional league moved in nearby. Workers—who have done much to spur the local economy—are doubling, even tripling up in small apartments. Some are even sleeping in cars.

Mr. Long, who happens to be a contractor, wants to help by building

affordable new homes for these workers. Unfortunately, that's the last thing the Elms Zoning Board wants to happen.

Elms, they say, has enough houses. "We have to control our growth," says Barney Hunkeler, longtime resident and councilman. "We don't need any more strangers than the ones we have now."

Mr. Long sees it differently. "I think it's pretty cheap. Everyone was a stranger here at one time or another."

While the current recession has generally eased much of this country's growth problem, in any area it has not ebbed at all. In Las Vegas, population increases

LAS VEGAS—Ever since gambling came to this desert town, people have, too. Between 1970 and 1990, the population doubled. By 1990, over a quarter million people were calling it home.

If trends continue, say experts, Las Vegas will have a serious crisis on its hands.



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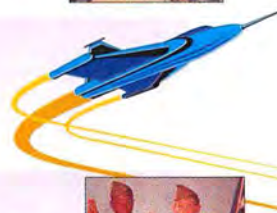
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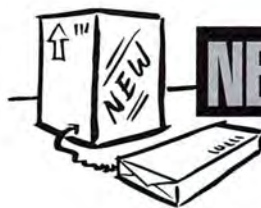
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## NEW ON THE MENU

**The Performas' second act has begun.** Having proved that Americans will indeed buy computers where they buy vacuum cleaners, Apple has launched the second round of Performas: the Performa 405, 430, and 450. This time Apple had these goals in mind: adding more value; putting everything into a single box; lowering prices; and providing a low-cost color machine.

For value **Apple has added a Global Village TelePort/Bronze** 2,400/9,600-bps data/fax-send external modem. The new Performas also include client software for both CheckFree and America Online, so you can sign up for those services.

The Performas' single-box packaging contains what Apple calls a "complete out-of-box experience" (sounds like Shirley MacLaine spent some time in Cupertino): the CPU (with the software already loaded), keyboard, mouse, modem, cables, and monitor.

All three machines are repackaged versions of either the LC II (the Performa 405 and 430) or the LC III (the Performa 450). **The 405 is Apple's least expensive color system**, with an expected selling price of around \$1,299. A 4/80 (4 megabytes of RAM and an 80-megabyte hard drive) LC II, the 405 includes enough VRAM (256K) to drive its monitor at 4 bits (16 colors); you can add more VRAM for 8-bit-color support.

The 430, which should sell for about \$1,499, is

the same as the 405 except that it has a bigger hard drive (120 megabytes instead of 80) and more VRAM (512K, for 8-bit color).



The Performa 450, which is expected to sell for about \$1,799, is a repackaged LC III, so it's **twice as fast as the other 400-series Performas**. The 450 comes configured as a 4/120 model, with support for 8-bit color. Unlike its siblings, the 450 can have nearly quadruple the amount of RAM (a maximum of 36 megabytes instead of

10) and double the video bit depth.

**Apple is also including more software** than with the previous Performas. Depending on whether your Performa dealer also sells office furniture or

washing machines, you can get packages such as ClarisWorks (version 1.0), WordPerfect Works, TouchBASE, Macintosh PC Exchange, or Spectre Challenger.



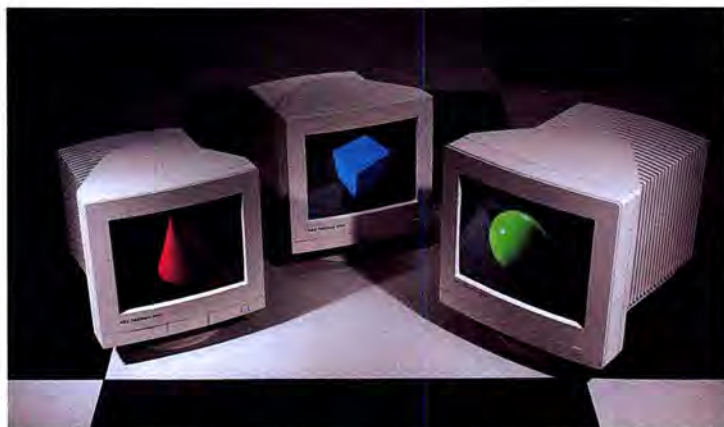
### Up to Date . . .

**Microsoft Office 3.0** is now available on CD-ROM. Microsoft's bargain bundle packs Word 5.1, Excel 4.0, PowerPoint 3.0, and a Mail 3.1 client onto the disc for less than the price of two of the stand-alone packages.

206-882-8080. \$750. **Version 2.0 of Vividus' Cinemation**, the Mac's first interactive presentation package, lets you control QuickTime movies in a presentation and cut and paste among movies. 415-494-2111. \$495.

By Russell Ito





NEC's FGe monitor line offers the same high quality as the company's successful FG line but with fewer supported resolutions and — more important — lower prices.

## NEC's Value Monitors

With Apple driving down the price of its Macs while packing still more features into them, third-party peripheral manufacturers have had to rush to keep pace. NEC has kept its eye on Apple and has created the second generation of its popular MultiSync FG monitors.

The new series, called the MultiSync FGe line, has lower prices, supports Apple's internal video circuitry on all the new Mac models (including the Centris machines), and offers multiple resolutions with on-the-fly resolution switching.

The 3FGe, which replaces the earlier 3FGx monitor, is a general-purpose 15-inch model. It supports resolutions from 640 x 480 pixels to 1,024 x 768 pixels, or 58 to 93 dpi.

The 4FGe, which is identical to the earlier 4FG, is the only model in the FGe line that offers NEC's AccuColor digital color controls. Like the 3FGe, the 4FGe is a 15-inch model that supports resolutions from 640 x 480 pixels to 1,024 x 768 pixels; however, its refresh rates at its higher resolutions (896 x 672 pixels and 1,024 x 768 pixels) are higher than the 3FGe's (76 hertz versus 68 hertz and 75 hertz versus 60 hertz).

The 17-inch 5FGe is the largest of the FGe monitors and complements its slightly more sophisticated predecessor, the 5FG, which remains in NEC's product line. The 5FGe offers the same resolutions as the other FGe monitors, but it doesn't offer the AccuColor controls found on the 4FGe or the earlier 5FG. On the other hand, the 5FGe costs \$200 less than the 5FG.

NEC Technologies, Inc., 1255 Michael Drive, Wood Dale, IL 60191; 800-632-4636 or 708-860-9500. 3FGe, \$599; 4FGe, \$699; 5FGe, \$1,099.

## MacWrite Pro at Last

More than two years ago, Claris announced a major enhancement to its word-processing package, MacWrite II. Since then, the product has suffered the curse of the "Pro" word processor, otherwise known as the FullWrite syndrome. But Claris has persevered, and MacWrite Pro is finally finished. What's surprising isn't what's changed since the original announcement but what hasn't. MacWrite Pro is indeed the very product Claris promised.

MacWrite Pro greatly extends MacWrite II's capabilities for both word processing and basic desktop publishing.

For word processing, MacWrite Pro offers true style sheets in addition to custom character styles. International spelling is also supported, so you can assign a foreign language as part of a word's style and then, when you perform a spelling check, MacWrite Pro automatically switches to the appropriate foreign-language dictionary, letting you complete a spelling check in a single pass.

You can also create tables in MacWrite Pro, thanks to a new plug-in architecture that Claris is calling ADDit. MacWrite Pro ships with plug-ins, or ADDits, for tables and for creating Post-it-type notes that you can attach to your documents. The notes can contain text or sounds or both.

MacWrite Pro's desktop-publishing functions should be enough to handle most simple publishing needs. With its floating palette of frame tools, MacWrite Pro makes it easy for you to create and

position text frames, for titles and sidebars, and graphics frames. Text can wrap around frames — even irregularly shaped graphics in a frame — and you can control the stand-off. Sections and multiple headers and footers are also supported, as are multiple columns, so you can create a document that starts in a single column and then switches to a three-column format. MacWrite Pro doesn't use a page-preview mode; you can adjust your columns and margins simply by dragging guides on-screen. You can import TIFF and EPS graphics into MacWrite Pro, and the program also supports 81 colors.

Claris Corp., 5201 Patrick Henry Drive, P.O. Box 58168, Santa Clara, CA 95052; 408-727-8227. \$249.

## Fast Hi-Res Printing

Having blazed new trails with the LaserJet 4M, which made 600-dpi printing truly affordable, Hewlett-Packard has now turned its attention to the needs of large workgroups. The LaserJet 4Si MX offers the same high-quality 600-dpi output as the 4M does — but at 17 ppm (pages per minute), more than double the speed of the 4M.

The LaserJet 4Si MX replaces the LaserJet 3Si and is intended for networked users, fitting especially well into mixed-platform environments. With parallel,



MacWrite Pro should appeal to users who need simplicity and power. Its word-processing features include style sheets, tables, and foreign-language support.





The Hewlett-Packard LaserJet 4Si MX brings to workgroups the same sharp 600-dpi output as the LaserJet 4M does — but at more than twice the speed (17 ppm).

LocalTalk, and Ethernet interfaces standard, the 4Si MX can automatically switch among printing jobs from a variety of network protocols and operating systems, including EtherTalk, LocalTalk, Windows for Workgroups, Windows NT, LAN Manager, IBM LAN Server, and a wide variety of UNIX flavors.

A PostScript Level 2 printer, the LaserJet 4Si MX uses a 25-megahertz Intel 80960CF RISC chip and 10 megabytes of standard memory to keep its engine chugging away at 17 ppm. To keep things moving even while it's printing PostScript jobs, the 4Si MX buffers one page while printing another, so it can print continuously without pausing between jobs.

Paper handling is another of the LaserJet 4Si MX's strengths. It comes with two 500-sheet trays standard and a 500-sheet output bin (the 4Si MX offsets print jobs in the output tray, so finding your document is easy). Optional paper supplies include a 1,500-sheet sheet feeder, a 2,000-sheet output stacker, a duplexing tray for two-sided printing, and a power envelope feeder with a capacity of 100 envelopes.

Hewlett-Packard Co., P.O. Box 58059, MS511L-SJ, Santa Clara, CA 95051; 800-752-0900. \$5,499.

## The Mensa Monitor

High-end-color publishers make heavy demands on their monitors — and their monitor vendors. Control over screen geometry, color accuracy, resolution, and refresh rates are all vital, so Radius has responded with what may be the most sophisticated monitor on the market: the IntelliColor Display/20.

A 20-inch Trinitron display, the IntelliColor Display/20 offers resolutions as high as 1,600 x 1,200 pixels and refresh rates as high as 160 hertz. A single control panel lets you adjust all of the monitor's settings, including convergence and image shape, size, and positioning. You can even adjust the monitor's white point, choosing from one of three preset color temperatures: 5,000, 6,500, or 9,500 degrees Kelvin. And because the software addresses the monitor's guns individually, adjusting the color temperature does not affect

# NewsLine

## Reports and Analysis

### Microsoft May Lose TM on Windows

WASHINGTON, DC — The U.S. Patent and Trademark Office may have shattered Microsoft's Windows. The Patent Office issued a preliminary decision denying Microsoft's application for a trademark on the word *windows*. In denying the application, the Patent Office contended that *windows* is a generic term in the computer industry and was widely used prior to Microsoft's development of the Windows product. If the ruling stands, Microsoft will have a much harder time defending its product from competitors such as Borland. Microsoft is expected to appeal.

### WordStar Buys WriteNow

NOVATO, CA — WordStar may yet come to the Mac, but when it does, it may look a lot like WriteNow. WordStar International has acquired all the rights to T/Maker's word processor WriteNow and will take over all marketing, development, and support of WriteNow. The WriteNow development team will stay with the product under WordStar's aegis. T/Maker will focus its efforts on content publishing, where it has already been successful with a line of clip-art packages.

### Apple Slashes Ilv Prices

CUPERTINO, CA — As usual, Apple's release of new computers means good news for those considering buying the earlier models and bad news for those who have already bought. With the release of the Centris 650, Apple has slashed the prices of the Ilv by as much as \$1,050 (36 percent). The new Ilv prices (along with the reductions and percentage changes) are 4/80, \$1,899 (down \$1,050, or 36 percent); 5/80 with CD-ROM drive, \$2,339 (down \$880, or 27 percent); and 4/230, \$2,269 (down \$1,050, or 32 percent). Apple has announced a Ilv-to-Centris-650 logic-board upgrade, with an introductory price of \$1,199 through the summer.

### SuperMac Buys E-Machines

SUNNYVALE, CA — Broadening its reach into the realms of monitors as well as new technologies, SuperMac Technology has licensed E-Machines' products, brand names, and distribution rights. Under the acquisition, E-Machines will operate under the name E-M Technology and will focus on research and development. In addition to acquiring E-Machines' monitor line, SuperMac becomes a power in the design and manufacture of PowerBook Duo docks: It not only designed and manufactured the MiniDock for Apple but now also gains two additional docks from E-Machines.

— Russell Ito

the monitor's brightness.

The IntelliColor Display/20 supports Centris and Quadra video, so you don't need a video card with those Macs. With the internal video on those machines, you can use resolutions as high as 1,152 x 870 pixels (two pages) at 8 bits (256 colors) or use a lower

resolution (640 x 480 pixels) for a full 24 bits. With Radius' software, you can switch resolutions and bit depths on the fly.

Radius, Inc., 1710 Fortune Drive, San Jose, CA 95131; 800-227-2795 or 408-434-1010. \$3,199.

— Russell Ito



# Multuser Macs

*Apple's first servers are scaled to fit your needs, and the company's new search software makes finding information fast and easy.*

By Russell Ito

In many offices, the Macs that become the servers are the machines no one wants to use anymore. Although this used-car approach is economical, everyone starts complaining sooner or later about how slow the server is. To remedy this situation, Apple has now introduced its first server Macs; new versions of AppleShare (see the sidebar "AppleShare Turns Pro," on page 136 of this issue); and AppleSearch, a new client/server application that makes finding information a snap.

Much like the Performa line, the Apple Workgroup Servers, models 60, 80, and 95, are new and not so new. Actually, all three are built on existing Macs — the Apple Workgroup Server 60 on the Centris 610, the Apple Workgroup Server 80 on the Quadra 800, and the Apple Workgroup Server 95 on the Quadra 950 — and with the exception of a PDS card in the high-end model, the only differences among the three servers are in configuration and software.

## AppleSearch: Finding It Fast

Apple likes to pitch itself as a solution-based company rather than a hardware-based company, so even while it was coming up with its servers, it was working on some additional software you could run on them. The problem, as Apple sees it, is that there's more and more information available but sifting through it all to get to exactly those precious scraps you need isn't as easy as it should be. So Apple has come up with AppleSearch, a free-form text-search-and-retrieval system.

Essentially, AppleSearch has two components: a client end and a server end. You create queries with the client software and pass them to the server. The server, which stores and indexes all the data, carries out your requests, returning just the information you've asked for. To make searches as quick as possible, AppleSearch creates an index for all the



text in a given volume of data — that's text only, because AppleSearch doesn't support graphics. AppleSearch doesn't require a dedicated server and can run on any network, from basic file sharing to AppleShare Pro; it does, however, require a 68030- or 68040-based server and a client running System 7.x.

Because Apple intends the use of AppleSearch to be as easy as possible, it has built a lot of intelligence into the system itself. As a result, when you query the server for information, you can write your query in standard English — for example, "Find all the references to hurricanes in Florida and Louisiana in 1992."

Once you've sent a query to the server, AppleSearch scans its index of the material on the server and returns a list of all the "hits" it finds. The hits are ranked, so, in the example above, the first items would include references to hurricanes in Florida and Louisiana, the next would cover Florida only, and the next would cover Louisiana only. You can then double-click on an item in the hits list, and AppleSearch retrieves the text and puts it into its scrolling text field. Because AppleSearch doesn't support graphics, if your particular story includes

images, they won't appear in what AppleSearch retrieves. However, you can view them if you click on the Get Original button. Doing so opens the original document in its creating application, so you can see everything.

To help make AppleSearch even less intimidating, Apple has also come up with some new terminology: Instead of creating queries, users create *reporters*, and instead of retrieving data, users are sent *newspapers*. The reporter/newspaper metaphor, however, isn't just cute. Reporters are named searches that reside on the server, so multiple users can use them. They can also be scheduled, so even if you're not connected to the server at the time, you can have a reporter execute a search and return a newspaper with the information you want the next time you log on.

To get the kind of performance that users demand, AppleSearch's indexes are large — in fact, they're roughly the same size as the amount of text in the document or volume being indexed. As a result, AppleSearch lets you schedule your indexing so it won't interfere with your work, and you can even set it to index only new or changed material, so



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## NEW ON THE MENU SNEAK PREVIEW

if you were subscribing to a news service, for example, you wouldn't have to reindex every time you received a new download. Because the indexing speed is expected to be 10 to 15 megabytes per hour, indexing an entire 600-megabyte CD-ROM will take a long time and scheduling will be very important.

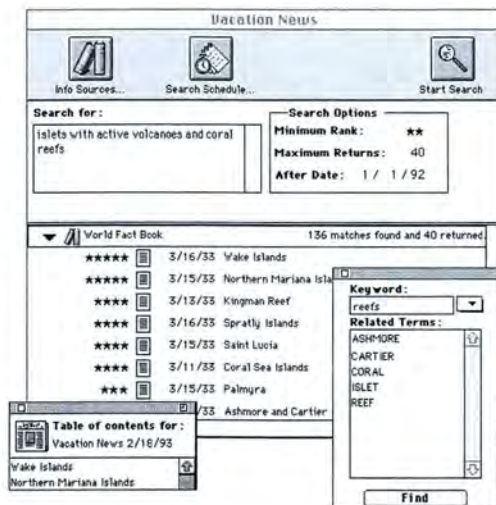
Because AppleSearch won't be available until sometime in the third quarter of this year, Apple couldn't supply a price, but it was willing to say that the system would cost less than \$5,000 for the server and some number of clients. At that price, AppleSearch will be about half the price of some competing server-based free-form text-search applications.

### Searching Ahead

In the future, AppleSearch will probably be used in some turnkey systems, and Apple is also considering it for publishing CD-ROMs. It's easy to foresee lockable CD-ROMs with an AppleSearch index, which you could then unlock and use as the search engine for data on the

disc. AppleSearch could then free developers from the time and expense of building custom search engines and open the door to content holders, such as newspaper and book publishers, who want to issue their material on CD-ROM quickly.

Apple's server plans will likely include extending the AppleSearch engine and the creation of a multiline remote-access server. If Apple has its way, those orphan Macs won't be recycled in the office phone closet much longer.



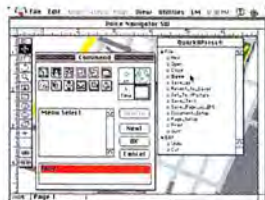
AppleSearch lets you quickly search large amounts of text. It ranks its finds, so, for example, the five-starred items will contain references to islets, volcanoes, and reefs.



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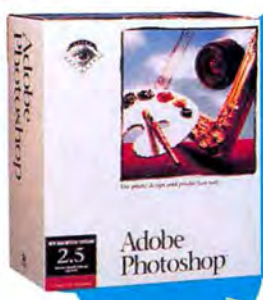
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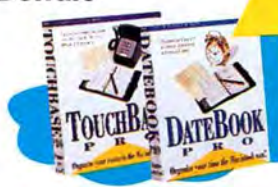


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	36	Four 8MB SIMMs	4	00848	\$1,352
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## GRAPHICS &amp; DESIGN

# addDepth and Adobe Dimensions

*The PostScript world gains an added dimension with these two new graphic tools.*

Illustrators and designers who are looking to add a third dimension to their PostScript artwork need search no longer. Two new applications, addDepth, from Ray Dream, and Adobe Dimensions, from Adobe Systems, transform 2-D art into 3-D type, logo, and package designs. When designs are rendered, both of these programs produce editable PostScript graphics, rather than the photo-realistic bitmaps associated with more sophisticated 3-D-modeling and -rendering programs.

## More Different Than Alike

At first glance, addDepth and Adobe Dimensions seem quite similar. However, upon closer inspection, we found several significant differences between the two programs. addDepth is easier to use than Dimensions, and it provides a full complement of drawing tools. Dimensions, on the other hand, is more powerful but less complete. Dimensions supports two methods for creating 3-D objects from 2-D artwork — extruding and revolving — whereas addDepth offers only extruding. As a result, with Dimensions, you can create more-complex objects, such as bottles. Similarly, Dimensions offers an almost limitless number of beveling options, whereas addDepth supports only simple front and back bevels without curves.


However, Dimensions lacks drawing tools — you must use it in conjunction with a draw program such as FreeHand or Illustrator. Dimensions doesn't even provide a Print command — you must export rendered artwork to an illustration program to print it.

## addDepth

addDepth takes a straightforward approach to 3-D design. You begin with a 2-D shape, which you can import from a draw program or create with addDepth's built-in Bézier drawing tools. You then extrude the shape to form a 3-D object.

Settings in addDepth's Geometry palette let you control the extrusion process

  
**addDepth 1.0**  
**Published by:** Ray Dream, Inc.,  
 1804 N. Shoreline Blvd., Mountain  
 View, CA 94043; 415-960-0768.  
**List Price:** \$179.

  
**Adobe Dimensions 1.0**  
**Published by:** Adobe Systems,  
 Inc., 1585 Charleston Road,  
 Mountain View, CA 94039;  
 415-961-4400.  
**List Price:** \$199.

either numerically or by dragging a slider. The Geometry palette also lets you set simple straight-line bevels.

You use addDepth's text tool to create 3-D type. The program supports multiple fonts, sizes, and styles within text objects, and you can apply baseline shifting and horizontal scaling to individual characters. You can also adjust word spacing, letterspacing, and alignment for text objects as a whole as well as kern individual character pairs. Unfortunately, however, most of addDepth's type controls aren't interactive — you're able to view their effects only when you close the text dialog box and return to the main

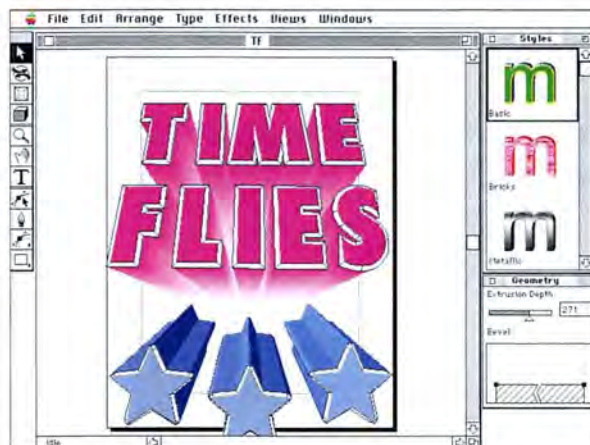
window — so trial and error is the rule of thumb.

Once you've created a 3-D object, you can move it in 3-D space, change your viewpoint, apply color and shading effects, and change the position of addDepth's single light source. Overall, the program makes the tricky business of manipulating 3-D objects commendably intuitive — Ray Dream gets high marks for interface design.

You align objects in three dimensions by positioning them along the horizontal, vertical, and depth axes. addDepth's Virtual Trackball lets you adjust an object's orientation in 3-D space by dragging. The program's Perspective box lets you change the point of view and vanishing point by simply dragging the back wall of the box.

You use addDepth's Styles palette to apply surface effects to objects. You can select a different effect for each object face — front, back, and side and front and back bevel. The program supports five surface effects in all.

The Shading effect determines color, highlight, and shadow properties as well as the gradation precision for blends used to represent shading. The Stroke and Fill effect works in much the same way as the standard stroke and fill options used in PostScript illustration programs. The



addDepth provides intuitive controls for creating 3-D designs by extruding 2-D art. The Styles palette lets you enhance 3-D objects by applying a variety of surface effects. A complete set of drawing tools is available for creating 2-D art within addDepth.



Gradation effect creates graduated fills. You can set the start and end colors of a fill and control the number of blends. The Invisible effect makes selected faces invisible, a useful option that saves you time by excluding hidden faces from the rendering process. And last, the Decal effect lets you map artwork onto selected faces. Particularly useful in package design, this is perhaps addDepth's most powerful effect. When you choose the Decal effect, addDepth prompts you to select a PostScript or vector-based graphic, which it then displays in a preview window. You can scale decal graphics to fit objects and edit decals with addDepth's 2-D drawing tools after you've applied them.

Finally, in addDepth's Lightsources dialog box, you indirectly set the position of the program's single light source by moving a highlighted area around on the face of a sphere. Unfortunately, there is no way to adjust the light's intensity.

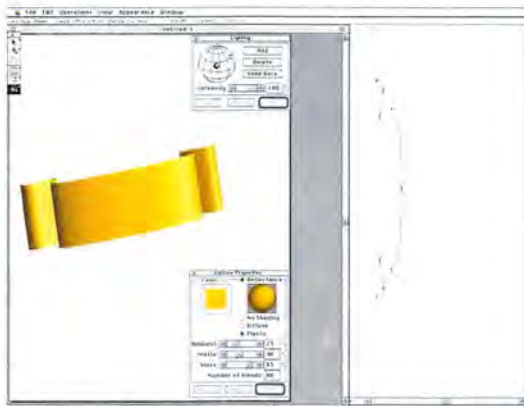
Once your 3-D artwork is complete, you can print it from directly within addDepth or save it in Illustrator 3, FreeHand 3, PICT, EPS, or native addDepth format.

### Dimensions

Adobe Dimensions demands familiarity with either Illustrator or FreeHand. Although the program provides a set of 3-D primitives (cuboids, spheroids, cones, and cylinders), you generate most of your 3-D designs from 2-D shapes created with a PostScript drawing program. This includes type, which you must convert to an outline before you can import it. The program reads Illustrator and FreeHand formats, and it can open Swivel 3D files and convert them to the Dimensions format.

As with addDepth, you begin with a 2-D shape, convert it to a 3-D object, position it in 3-D space, apply surface properties and lighting, and then render the object. But Adobe Dimensions provides many more options than does addDepth, although it's often less intuitive to operate. Like Adobe Illustrator, Dimensions' work area displays wire-frame representations of objects — you can view surface and lighting properties only when you render your work. Moreover, Dimensions' rendering speed is significantly slower than addDepth's.

Adobe Dimensions' methods for orienting objects in 3-D space are not as



Adobe Dimensions lets you transform 2-D art into 3-D by both extruding (top) and revolving (bottom). Dimensions provides more control over surface properties, such as reflectance, than addDepth does, but its limitation is that it provides no drawing tools of its own — you must use it in conjunction with a draw program.

elegant or intuitive as addDepth's. Menu choices offer ten viewpoints and four perspective options. Although a trackball tool lets you rotate objects in 3-D space, Dimensions lacks the interactive controls offered by addDepth, which let you continuously vary perspective and viewing angles.

These disadvantages aside, Adobe Dimensions lets you create designs that are more complex than addDepth designs. In addition to creating radially symmetrical designs (such as bottles and vases) by revolving 2-D objects, Dimensions lets you apply complex bevels to extruded objects. You can apply any single open path created with a draw program to an extruded object as a bevel. Dimensions automatically scales it to fit. The program includes a library of bevels, but it's easy to create new ones as well, provided you're equipped with Illustrator or FreeHand.

Adobe Dimensions' approach to applying surface properties is also superior to addDepth's. Both programs support the RGB and CMYK color models, although Dimensions provides more control over reflective properties. You can apply Diffuse shading, which mimics a matte surface, or Plastic shading, which lets you control the amount of gloss and matte reflections. A preview window displays the effects of each setting on a small spheroid. You can also set the number of blends — too few can cause banding in the output, whereas too many can create an unnecessarily large file. The manual devotes considerable space to explaining how to calculate the number of blends needed.

Like addDepth, Adobe Dimensions lets you map artwork onto 3-D objects. The program gives you considerably



more control over how your artwork is scaled to fit than addDepth does, but you can't edit the artwork with Dimensions. Of course, once you've exported rendered designs, you can edit objects and any mapped artwork with FreeHand or Illustrator.

### The Bottom Line

If you need a relatively fast and simple program for creating basic 3-D art and type, addDepth is the way to go. But be aware that your designs will be limited by addDepth's total reliance on extrusion methods for transforming 2-D objects to 3-D.

If you're an accomplished illustrator, or aspire to be one, and you're looking for a way to produce fairly complex 3-D artwork, Adobe Dimensions offers a great deal of power. But be prepared for a steep learning curve.

— Bruce Fraser





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DATABASE MANAGEMENT

# 4th Dimension 3.0.1

ACI adds multiprocessing and speed enhancements to its world-class database-development system.

The latest release of the Mac's most powerful relational-database-development tool takes 4th Dimension a long way toward delivering mainframe-class functions on a microprocessor platform. While correcting the performance problems that plagued earlier versions, version 3 of 4D also features new multiprocessing capabilities, an enhanced interface, and a new multiuser strategy. Multiuser facilities are no longer built in to 4D — ACI has split them off to create a separate server product, called 4D Server.

## The 4th Dimension Advantage

4D's forte is building complex multiuser database applications that run on corporate networks. Despite the program's power and complexity, however, we found that the new version's interface shields both developers and application users from the complicated underpinnings of 4D's relational design. In fact, for users, the interface of a well-designed 4D application can rival the clarity and simplicity of a FileMaker Pro interface.

Make no mistake, though — 4D is a full-blown relational-database program. Rather than creating one gigantic file



**4th Dimension 3.0.1**  
Published by: ACI,  
Inc., 10351 Bubb  
Road, Cupertino, CA  
95014; 408-252-4444.  
List Price: \$895.

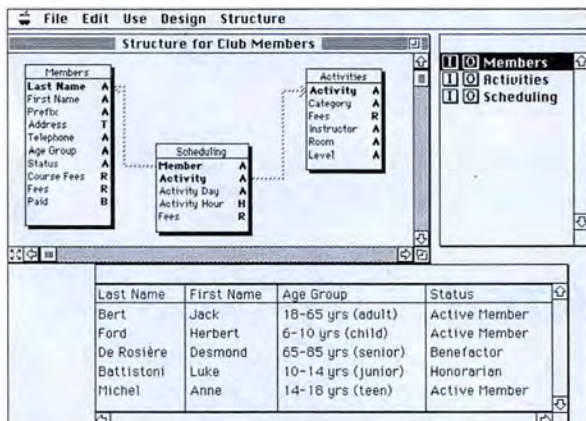
that contains all of an application's data and access routines, as FileMaker Pro does, 4D creates a separate file for each logically connected piece of data as well as for routines, procedural code, forms, and so on.

This keeps individual files small, boosting 4D's overall speed.

Interface enhancements in the new release make it easier to switch from design mode to user mode than it was in the previous version. That means that as you create database structures, input and output layouts, reports, menus, procedures, and other parts of your application, you can easily switch to user mode to test how well your structures work. In addition, 4D now supports multiple processes running simultaneously as well as multiple open windows. Each active window runs independently of the others. However, with interprocess communications, one window can automatically update the data in another.

## Multiprocessing

Of the improvements in version 3, 4D's new multiprocessing feature is the most significant. In effect, it gives 4D a built-in multitasking system, so it can execute several tasks simultaneously (including



The current release of ACI's powerful 4th Dimension relational-database-development tool can display both the design environment and the user environment simultaneously, so developers can readily see how their design structures work.

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different 4D procedures), just as database programs running on mainframes and networked high-end workstations can. In practice, this means that you can print 4D reports, search for new records, sort large files, and update old files all at the same time, with each task displayed in a separate window.

We applied rigorous tests to 4D's new multiprocessing capability and found that it held up admirably. In one test, we sorted one file numerically, using four fields; sorted a second file alphabetically, using a single field; and searched a third file for specific records. The procedures executed separately and nearly simultaneously. To help you keep track of multiple operations running simultaneously, you can use 4D's pop-up Process List.

Version 3's ability to display multiple windows at the same time is a big improvement over the previous version's single-window model. In addition, each open window is updated automatically, so you don't have active windows that appear to be frozen in time. This feature makes any application you create easier to use.

### Improved Performance

Since its introduction, 4D has suffered from speed problems. However, the latest release offers vast speed improvements over the previous version, finally placing 4D in the same league with other high-end relational-database-development tools for the Mac, as well as with those for PCs and UNIX workstations.

To test 4D's speed, we built several 30,000-record files and then performed searches, sorts, and field indexing. The speed of the new release was, on average, 20-to-40 percent faster in our tests than the speed of the previous version, depending on the test CPU. For example, on a Mac IIci equipped with 32 megabytes of RAM, a SCSI-2 board, a Fujitsu 510-megabyte hard-disk drive, and a DayStar Digital 33-megahertz 68040 accelerator with a 128K cache card, we measured average speed gains of about 40 percent. If you're already a 4D user, speed improvements alone make the new version well worth the \$295 upgrade cost.

### Rich Programming Language

One last area of improvement is in 4D's already-rich programming language, which looks much like Pascal. ACI has beefed up the language by adding more data structures and built-in commands. For example, the new version provides more commands for controlling processes and interprocess variables. In addition, it provides support for floating palettes and windows, allowing developers to exploit the advantages offered by the Mac's interface. In addition to palettes and windows, 4D applications can support menus, buttons, pop-up menus, scrollable areas, radio buttons, and check boxes.

For reporting purposes, we liked 4D's able Quick Report editor. Its editing capabilities — with File, Edit, Font, and Style menus — are reminiscent of those

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AA71048	Cairo	American Airline	10:48	Final Boarding
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UA71118	Bombay	United Airlines	11:18	Now Check-in
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found in the 4DWrite add-on module. When you open the editor, 4D presents a scrolling window that you can use to select field names for reports. Another scrolling window lets you change the default field-display order. A compositing window lets you easily position fields relative to one another, change their display characteristics, and embellish them with graphical elements. In addition, you can add buttons to represent calculated fields, including Sum, Max, Min, Average, and Count.

### Upgrading

For 4D users ready to step up to version 3, ACI has made it painless to convert applications that were created with the previous version. As developers know, file incompatibilities, missing commands, and plain old bugs can conspire to make the conversion process not only maddening but also susceptible to data loss. With 4D, however, you simply open applications created with version 2.2.3 from within version 3 and execute the Convert command, which changes the structure of an existing 4D file in a few seconds.

After it has converted the file, version 3 will need to reindex all associated data files to bring them up to date as well. The reindexing process, however, takes much longer than the structure conversion (30 minutes for a 1.7-megabyte data file on our souped-up Mac IIci). To speed this process, you can use the 4DTools utility, which is included with the package. 4DTools can reduce by 70 percent or more the reindexing time required by 4D version 3.

In addition to 4DTools, the 4D package also includes Customizer Plus, a program that lets you change default fonts, modify the native language (the program is WorldScript-ready), and add

function keys to any application you create. It can also update any routines from version 2.2.3 applications, so you can use them with the new version. For those who need additional programming utilities, ACI sells a slew of them.

One other important consideration for any developer of complex mission-critical database applications is support. We found the ACI developer-support program to be exemplary.

### 4D Server

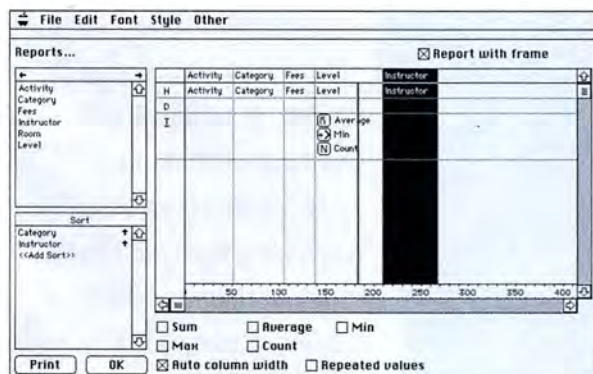
4D Server, the client/server version of 4D, is nearly identical to the nonserver version, except that it includes multiuser access capabilities that support AppleTalk networks. Unlike the previous version of 4D, 4D Server doesn't rely on AppleShare-compatible server software to locate data on a hard disk — the capability is built in to the program.

4D Server includes both server and client software. You can open any 4D application from within 4D Server — no translator or additional software is required. For enterprisewide connectivity, 4D Server is compatible with SQL-based multiuser products such as SYBASE and Informix. ACI offers multitiered pricing for 4D Server: A three-user server is priced at \$1,495, six-user at \$2,495, and unlimited-user at \$15,000.

### The Bottom Line

For large-scale database-application development on the Mac, no other tool can match the power offered by 4th Dimension and its multiuser counterpart, 4D Server. With its client/server architecture, enterprisewide connectivity options, multiprocessing capabilities, and performance enhancements, the latest version of ACI's development tool is a must-have for any serious developer.

— Don Crabb



4D's Quick Report editor features scrolling windows that display field names for selection and sorting. You can also add buttons that represent calculated fields.

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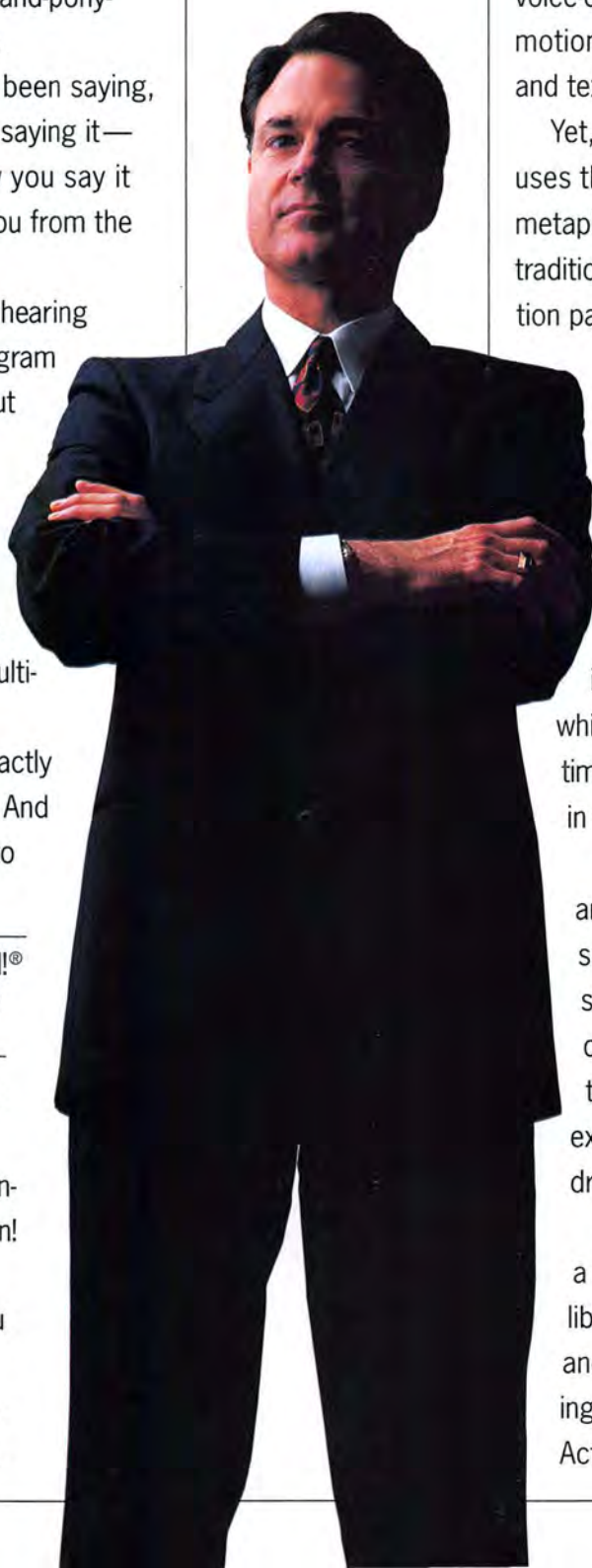
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Computer Shopper, January 1992

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MacWorld, February 1993

“(Action!s) greatest strength is that it allows regular businesspeople to apply multimedia as they see fit.”

PC/Computing, December 1991



Action! 2.5 for Windows offers many exciting new features, including data-driven motion charts with DDE links, as well as support for the newest digital video formats.

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PERSONAL-INFO MANAGERS

# Now Up-to-Date 2.0

*Now's elegant personal scheduler gains to-do items and a list view.*

The big challenge for developers of personal-information managers is to boost the versatility of their software without reducing its simplicity and ease of use. The makers of Now Up-to-Date have clearly met the challenge with the release of version 2.0. Building on the first version's top-notch personal-scheduling features, the second release adds to-do lists, enhanced printing and reminder features, and a variety of other useful improvements.

## What to Do

By adding support for to-do lists, Now Up-to-Date (NUD) helps you organize unscheduled activities as well as scheduled ones. You can carry to-do items forward and prioritize, categorize, and repeat them. To-do items can appear in most of NUD's calendar views as well as in the new list view.

The list view displays your appointments, special dates (such as birthdays and holidays), to-do items, banners, and notes as text in a column. You can easily sort the list by event type or other criteria, edit it, and modify event attributes. And you can create custom list views — each with a different format — that display only selected event types and attributes.

For example, you might specify that a format using red Helvetica type exhibit only those appointments and to-do items that are business-related and scheduled for Monday through Friday, excluding all banners and personal items. You can use as many formats as you need in order to distinguish your views from one another. This style-sheet-like feature is a great tool for quickly viewing information related to specific event types.

In addition to being a single-user scheduling tool, NUD is great for workgroup



**Now Up-to-Date 2.0**  
**Published by:** Now Software, Inc., 319 S.W. Washington Street, 11th Floor, Portland, OR 97204; 503-274-2800.  
**List Price:** \$99 (5-, 10-, and 50-user packages are available).

scheduling over a network. With the previous version, you couldn't take advantage of the event-categorization tools unless you were connected to a network server. Version 2.0, however, lets a single user create as many event categories as necessary.

You can also use more characters to describe your events (as much as 32K's worth) than you could with the previous version. You can schedule events in increments as small as 1 minute (the previous version used 15-minute increments). In addition, version 2.0's export options include support for the Sharp Wizard and control over the export order of the data.

NUD's new printing options make it easier to get the exact output you're looking for. For starters, the Appointment

Book Print Module application is gone — all printing features are incorporated into the NUD application, and most are readily available in the Print Options dialog box. Version 2.0 includes additional appointment-book sizes for Day-Timer and other formats, a thumbnail print preview, custom headers and footers, double-sided printing, and selected-date-range printing. Its ability to print a file to disk in PICT format comes in handy if you need to incorporate a monthly calendar into a word-processing document or company newsletter.

Now Software has expanded NUD's reminder feature to provide a flexible menu-bar clock plus the ability to set snooze time and other reminder options. You can use the menu-bar clock's pull-down menu to create and edit appointments and to-do items without having to open your calendar file and the NUD application — a nice touch and a real time-saver.

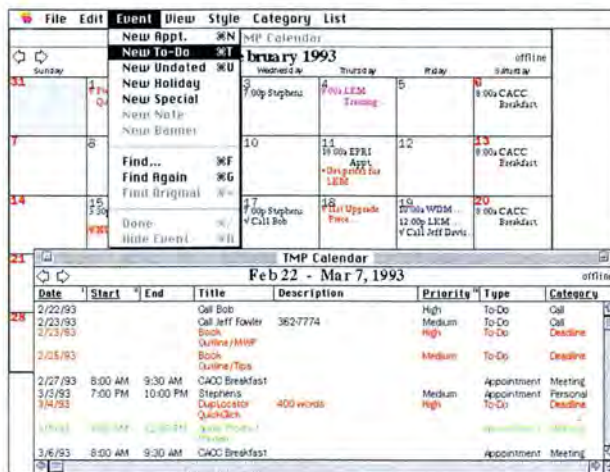
Moreover, Now Software managed to add this long list of additional features to NUD without exacting a price in usability. The program's elegant and simple interface has changed very little from the previous version's. You can still enter

events directly into any calendar view, add multiday banners and Post-it notes, and enhance your calendars with graphics.

## The Bottom Line

From the start, Now Up-to-Date has enjoyed a top slot among personal scheduling programs. With the addition of such noteworthy features as to-do lists, a list view, and enhanced reminder and printing options, version 2.0 leaves the competition behind. For those who need help managing a busy schedule, we recommend Now Up-to-Date without reservation.

— Tom Petaccia



The new version of Now Up-to-Date can manage to-do-list items in addition to calendar-based information.



# TimesTwo

*Golden Triangle pioneers driver-level compression software for the Mac.*

**Y**ou can never be too rich or too thin or have too much hard-disk space.

Witness the slew of compression software introduced over the last two years, designed to help us increase the capacity of our hard disks. The newest utility on the block, Golden Triangle's TimesTwo, takes an entirely different approach to compression than its predecessors. As the first driver-level compression software for the Macintosh, TimesTwo doubles the capacity of your hard disk without requiring any intervention from you once you've installed the program. There are several catches, however, that affect the disk as well as the files stored on it.

## No-Brainer Compression

Because it works by replacing your hard disk's driver software, TimesTwo offers several advantages over other compression products. Control-panel-based programs, such as AutoDoubler and SpaceSaver, compress files after they've been written to the disk. These programs are not only complicated to install and maintain but also, to access the compressed files, you must run the control-panel software. On the other hand, once you have installed TimesTwo (a simple process), it automatically and transparently compresses raw data as it's written to and read from the disk. No fuss, no muss. No other software required. When you move a file from a TimesTwo disk to a floppy or to another hard disk, it arrives in its original uncompressed format. In our tests, our 40-megabyte disk consistently managed to store about 74 megabytes of data. One note: Compressed disks can't be used for AppleShare file servers, although System 7's personal file sharing works just fine.

Now for the dark side of this bright picture. Because TimesTwo doesn't provide an "uninstaller" program, if you ever want to return your hard disk to its normal state, you must back



### TimesTwo 1.0.1

**Published by:** Golden Triangle,  
4849 Ronson Court, San Diego,  
CA 92111; 619-279-2100.

**List Price:** \$149.

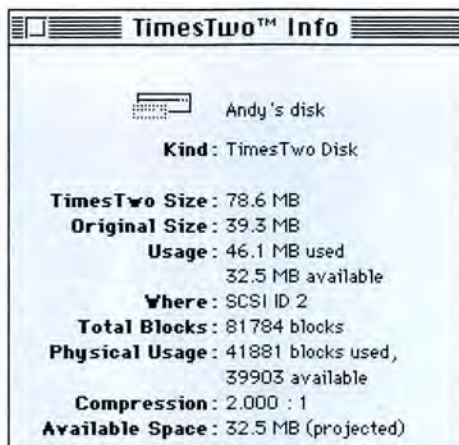
up all of your files and reformat the disk. In addition, the current iteration of the TimesTwo driver lacks partitioning features, can't automatically mount removable cartridges, and doesn't support password-protection (the latter two features are promised in version 1.02, which should be available by the time you read this). TimesTwo also slows the performance of your drive, although you'll probably notice the difference only if you run disk-intensive applications.

An even more sobering concern, however, is file safety. When TimesTwo compresses the data in your files, the low-level data is stored in a format that's unfamiliar to disk-protection programs such as Norton Utilities and MacTools. As long as the TimesTwo driver is intact (the TimesTwo installer can replace a damaged driver with a fresh or updated copy), these disk utilities should work

fine. Our tests showed that after running TimesTwo's Verify function, as recommended in the manual, Norton Utilities was able to successfully fix problems in a TimesTwo volume's boot blocks and information block (where most of the nastiness usually occurs) as well as recover individual files.

When more-desperate measures are required, however, the unique format of the TimesTwo data will almost certainly hamper recovery attempts to some degree. And although Golden Triangle promises "full compatibility" with most popular disk-protection programs, at this writing, the makers of those programs consider the recovery of disks compressed with driver-level software to be very much a gray area. Furthermore, folks who do data recovery for a living are openly skeptical. Unfortunately, TimesTwo doesn't supply a stand-alone application for independently recovering raw disk data to floppy disks.

Recovery experts also ponder how the loss of a few bits of data (a normal occurrence over time) will affect compression algorithms. With compression algorithms, every bit of data relies on the integrity of previous bits for successful decompression.



**By replacing your hard disk's driver software, TimesTwo automatically doubles the capacity of your disk.**

## The Bottom Line

As the first driver-level compression utility for the Mac, TimesTwo is destined to take a lot of the heat for pioneering a fairly new technology. This may not be the safest way to increase the capacity of your hard disk, but it's certainly viable. We highly recommend that you regularly back up your data, though, for minimal risk.

Overall, TimesTwo will get you out of a short-term storage pinch very nicely. But if you regularly find yourself short of hard-disk space, the best and simplest solution is to use a crowbar on your wallet and buy a bigger hard drive.

— Andy Ihnatko



## PAINTING &amp; IMAGE EDITING

# Painter 2.0

*New special effects make Painter an artist's dream come true.*

**F**ractal Design wowed the artistic crowd with its first version of Painter, a paint tool designed to simulate natural media such as charcoal and chalk. The new version steals the show again with stunning new special effects, powerful photo-retouching tools, and welcome interface enhancements.

## Smearing Your Image

By far the most striking additions to Painter are special effects. The new liquid-media features let you manipulate areas of color, from simple splotches to complex photographic images, as if they were truly liquid. In addition, Painter provides new marbling effects. By combining marbling and Blobs — a command that simulates paint splattering — we were able to achieve realistic marbled designs. You can create other eye-catching effects with Glass Distortion, which does a great job of making images appear as if they were behind bumpy glass.

Painter's new lighting controls are also impressive. You can work with an almost infinite number of lights to create effects such as billboard lighting and dramatic splash lighting. Painter's lighting controls simulate those of a photography studio by enabling you to control lighting height, distance, brightness, exposure, and ambient light. The lighting features alone are worth Painter 2.0's \$79 upgrade price.

Many of the colors displayed by your monitor can't be reproduced by your printer. To address this problem, Painter 2.0 lets you view the printable color closest to the color you've selected on-screen. You can use the Video Legal Colors dialog box to preview colors for both NTSC and PAL video systems as well.

Newly added support for the EPS file format lets you save EPS DCS (Desktop Color Separation) files as well as import EPS images from Illustrator and FreeHand. Because Painter lacks its own pen



**Painter 2.0**  
**Published by:** Fractal Design Corp., 335 Spreckels Drive, Suite F, Aptos, CA 95003; 408-688-5300.  
**List Price:** \$399.

tool, the ability to tweak Bézier outlines from within a draw program and import the resulting EPS file into Painter is especially handy. Additionally, Painter now supports four-color separations.

With version 2.0, Fractal Design has enhanced Painter's friskets (called *masks* in the lingo of most other programs). You can manipulate friskets to create holes in them, a feature that functions like Illustrator's compound paths.

New paint features include a Scaling dialog box, which provides more-accurate controls for pressure-sensitive tablets as well as Burn and Dodge features for image processing. The Burn feature lightens an image and Dodge darkens it.

Additional image-processing features include the Posterize, Brightness/Contrast, Equalize, Unsharp Mask, Motion Blur, and Soften commands. To complement these commands, Painter provides a wonderful magic-wand tool that lets you define a mask by dragging the wand

over an area of your artwork. By adjusting HSL sliders in a dialog box, you can easily shrink or expand the mask area. This feature makes selecting blue screens or other semicomplex backgrounds a snap. Compared with other programs' magic-wand implementations, Painter's is especially well designed and intuitive.

New interface enhancements to Painter 2.0 are inherited from Sketcher, Painter's gray-scale sibling. You can now tear off brush palettes and position them anywhere on-screen for easy access. Preview windows provide quick and accurate representations of effects, so you can see how they look before you apply them. This preview feature is especially welcome with lighting and marbling effects, which can take minutes to apply, even on a Quadra 700.

Painter has also inherited Sketcher's type tool and scratchboard. The type tool can import Type 1 and TrueType fonts. Painter 2.0 uses the same nonstandard font picker as the previous version. Rather than providing a simple Font menu, Painter requires you to locate and select type outlines from your hard disk.

## The Bottom Line

It's hard to pick a favorite feature from Painter's substantial list of enhancements.

Most striking are the liquid-media features, which let artists manipulate images in ways never before possible on the Mac. Lighting controls are also outstanding and, teamed with Painter's new image-processing controls, amount to a sophisticated photographer's workshop in software.

Overall, the latest release of Fractal Design's exceptional artists' tool is a must-have upgrade for current Painter users. And artists and would-be artists who have not yet experienced this unique and powerful paint tool will find it well worth its \$399 price.

— Sean Safreed



The latest release of Painter lets you enhance your artwork with outstanding special effects.



# Theorist

*Simpler to use than Mathematica, Theorist gets high marks for its equation-solving and graphing tools.*

For ease of use and practicality, Theorist, Prescience's equation-solving and -manipulation program, has had the edge over Wolfram Research's blockbuster, Mathematica, since being introduced in 1992. The latest version of Theorist further sharpens its edge by adding support for tables and QuickTime movies. Like Mathematica, Theorist helps you manipulate equations, visualize mathematical relationships, and demonstrate mathematical concepts. Unlike Mathematica, it doesn't require you to master a programming language to do it.


## Math Whiz

Using Theorist is a lot like doing math on paper. You create equations in a work space called a notebook, using either a palette of point-and-click icons or the keyboard to enter mathematical symbols. The program displays equations in familiar mathematical notation and graphs them in various coordinate systems.

You operate on equations symbolically or numerically, and, as any mathematician does, you try different assumptions. With Theorist, you can lay out alternative scenarios side by side and derive conclusions for each. Mathematicians entertain some pretty odd assumptions, such as  $a + b \neq b + a$ ; Theorist supports such assumptions with non-commutative or nonassociative algebra.

Speed and accuracy are the most obvious advantages of using a computer to do math, but Theorist offers other important benefits: Once you've created your equations and graphed them, Theorist lets you rotate graphs in three dimensions, animate mathematical relationships, manipulate equations by clicking and dragging variables, and automatically apply transformations and techniques such as integration by parts.

The latest version of Theorist features several important enhancements. The original program allowed data to be represented and manipulated in matrices, but the most recent release also supports tables. Matrices simply store the data



**Theorist 1.51**  
**Published by:** Prescience, 939  
 Howard Street, San Francisco,  
 CA 94103; 415-543-2252.  
**List Price:** \$449.95.

destined for formulas. Tables, on the other hand, can operate as alternatives to formulas and graphs for representing mathematical functions.

Theorist's tables can represent real- or complex-valued functions. Internally, the program stores a table as a list of values or pairs of values (if the function is complex). If you want to consult the list, much as you might a book of logarithms, Theorist displays it in graphic format. However, although graphic representations give you insight into the nature of the data in tables, you can't manipulate the representations as you can other Theorist graphs. Still, the feature comes in handy, especially when you're working with very large tables.

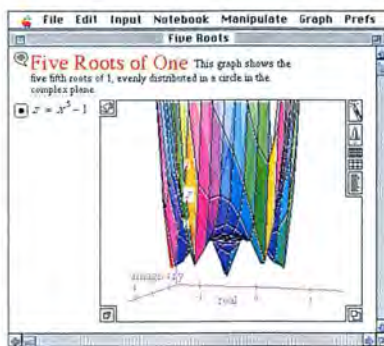
You can generate tables from data you import from spreadsheets and export table data to more-advanced graphing programs. One caveat: Although you can import data that contains both domain and range values into a table, when you export data from a table, the data contains only range values. This means that

you can't use the exported data to reconstruct the table, because the data is missing the start and increment values for the domain.

In addition to adding support for tables, the new version of Theorist provides QuickTime support that serves as more than mere window dressing. QuickTime movies provide the extra element of time for viewing mathematical relationships. When you're working with equations, it's extremely useful to be able to see how one variable changes as a function of another variable over time. Although QuickTime support is new with this version, support for animated functions is not. The previous version of Theorist allowed you to produce animations in PICS format.

Other new features include support for Fourier transforms and Bessel functions, the ability to create scatterplots from tables and matrices, and the ability to customize the appearance of notebooks with different fonts. In addition, the program can directly plot implicit equations of the form  $f(x,y)=g(x,y)$ .

Theorist's documentation is excellent and includes many useful examples. The program is available in two versions: The standard version can run on low-end Macs, including the Mac Plus, and the FPU version requires at least a 68020-based machine and a math coprocessor.



**Theorist uses graphs and QuickTime movies to help you visualize complex mathematical relationships.**

## The Bottom Line

If you're looking for the most accessible tool for creating, solving, and manipulating advanced mathematical expressions, Theorist is it. It doesn't offer a mathematically oriented programming language, support for distributed computing on a network, or portability to other hardware platforms, as does the more expensive and powerful Mathematica. But with its new support for tables and QuickTime movies, Theorist is an excellent program for engineers, scientific researchers, and students and teachers of higher mathematics.

— Michael Swaine



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FILE & DISK MANAGEMENT

# FileDuo and Fastback Plus

*FileDuo makes backup simple; Fastback Plus offers more-robust control.*

If you've ever experienced a hard-disk-drive failure, chances are you've probably already got backup religion. However, many users — and you know who you are — continue to work without a data safety net, because creating backups is just too darn time-consuming and inconvenient. To entice these users into the fold, two backup programs aim to take the tedium out of the backup process. ASD Software's new FileDuo targets single users looking for the simplest possible backup method. Fifth Generation Systems' Fastback Plus can meet the more complex needs of corporate environments.

## FileDuo

FileDuo is one of the most fluid and intuitive utilities we've come across in a long time. It rightfully bills itself as "easy automatic backup for the Mac." The program consists of a single, 162K control panel designed to copy files, folders, network volumes, and disks to any mountable volume — including SyQuest, Floptical, and magneto-optical media — at a specified time.

Setting up automatic backups takes just a minute or two. No macros are required. You simply open the FileDuo control panel and click on the Configure button, which brings up the setup dialog box. You then define your backup source and destination and select the backup type (complete disk or one or more files and folders), occurrence (at shutdown, at restart, or at a specific time or interval), and criteria (all files or only modified files). You can control how FileDuo handles applications, control panels, extensions, and the System file as well as the number of generational

  
**FileDuo 1.0.2**  
**Published by:** ASD Software, Inc., 4650 Arrow Highway, E-6, Montclair, CA 91763; 714-624-2594.  
**List Price:** \$149.

  
**Fastback Plus 3.0**  
**Published by:** Fifth Generation Systems, Inc., 10049 N. Reiger Road, Baton Rouge, LA 70809; 504-291-7221.  
**List Price:** \$149.

copies FileDuo maintains (FileDuo can maintain as many as ten generational backups, deleting the oldest copy once the set number has been reached). Last, you can opt for a backup log and error notification.

From there, everything is automatic. As long as the backup source and destination are available to the system, FileDuo will initiate backup at the appointed time. It even backs up most files that are open (applications such as FileMaker Pro and 4th Dimension store their files in memory, so it may not be able to completely copy them while they're open, however). The Backup List window lets you quickly add, duplicate, modify, or suppress a backup operation as well as launch it at will.

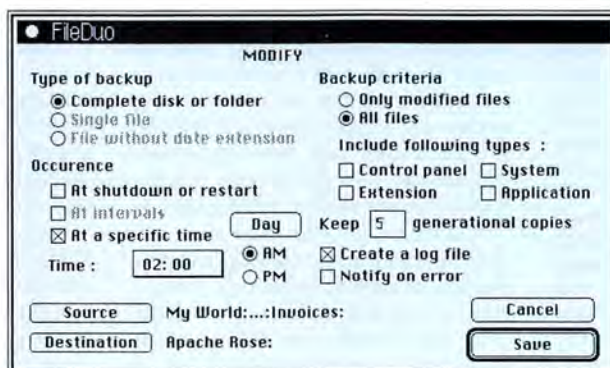
Our only complaint regarding FileDuo is that rather than copy files in the background, it must take control of your Mac during backup. Fortunately, you can cancel the process at any time. This small inconvenience aside, FileDuo is about as perfect as you can get for simple, no-nonsense backup.

## Fastback Plus

A quartet of new features marks the third release of the Mac's long-standing backup program, Fastback Plus. Version 3.0 offers a Finder-format copy feature (in addition to its own backup format), the ability to quickly delete a group of files according to any file-selection criteria, the Snapshot feature for recording your hard-disk directory, and a customizable window for viewing file and folder information.

Fastback is as sophisticated as FileDuo is simple. Its manual, for example has 336 pages, compared with FileDuo's 24. The program itself is also significantly larger than FileDuo — it weighs in at 582K (with another 100K in support files), compared with a trim 162K for FileDuo.

What Fastback delivers in return for its heftiness is control over the backup process — what, when, and how files



FileDuo's single dialog box (top) presents all of the utility's backup criteria. The Backup List window (bottom) lets you quickly add, duplicate, or modify a backup operation.



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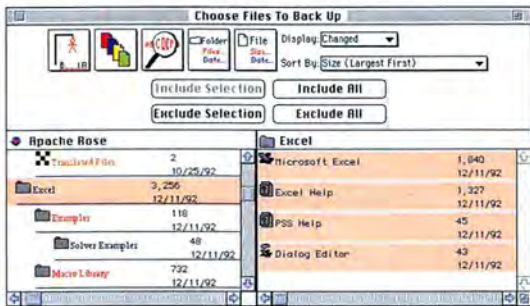
TRADE  
UP

NEW ON THE MENU

## REVIEWS



The new version of Fastback Plus provides lots of options for controlling backup operations. To restore your disk to a particular configuration, you can use the Snapshot feature (top) to record the disk's directory. By customizing the Choose Files To Back Up window (bottom) to display icons and specific file- and folder-related information, you can make backup selection easy.



be better located in the program's simple Express mode.

The new Snapshot feature is one of Fastback's most interesting enhancements. It takes a "snapshot" of your disk directory that you can use to restore your disk to a specific configuration. For example, let's say you do a

full backup on Monday and then delete several files on Tuesday. If it has taken a snapshot of your disk on Tuesday and you decide to reformat your hard disk on Wednesday, Snapshot can restore the disk to its Tuesday configuration by applying the snapshot to the Monday backup.

Overall, Fastback is a powerful backup program that provides users with a wealth of options and controls. However, novices may find the program unwieldy and a bit intimidating.

are backed up, archived, and restored. It can also back up your data to a series of floppy disks or to a tape-backup system.

You can operate Fastback in three modes: Express, Short Menus, and Full Menus. Express mode provides plain-vanilla backup and restore. The Express window lets you select a backup source and destination as well as the criteria for the files and folders it will copy (all, all changed, all except applications, and so on). The Files I Choose option prompts Fastback to scan your source volume and create a tree structure composed of the volume's folders and files; you then select the items you wish to back up.

### The Bottom Line

FileDuo constitutes simplicity itself and should meet the needs of most users who are looking for a personal backup method. It doesn't have all the bells and whistles Fastback Plus offers, but its straightforward design and faultless execution merit a strong recommendation.

Fastback Plus is not as easy to use as FileDuo, but it gives you more control over the backup process, making it well suited to power users and corporate sites that require daily, sophisticated backup procedures. It also offers the advantage of support for tape backup as well as the ability to back up to a series of floppy disks.

Our strongest recommendation, however, is that if you still find yourself among the crowd of optimistic users who are working without hard-disk backup, run — don't walk — to your nearest product source and get yourself a backup program.

— Tom Petaccia

Short Menus ups the ante in backup options and selection criteria. It provides several restore and data-compression options and lets you specify whether backing up overwrites existing files.

Full Menus provides even more controls for backing up, restoring, and erasing files according to file type, creator, size, creation date, and modification date. With Full Menus, you can password-protect and encrypt backed-up files. In addition, a macro feature lets you automate backup by creating scripts. Both Short Menus and Full Menus let you customize the Files I Choose dialog box to display various file attributes, making it easy to find and select specific files for backup.

Surprisingly, only with Full Menus can you initiate a straight, Finder-style copy operation from backup source to destination. This basic operation would

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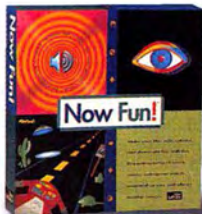
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PROJECT PLANNERS & ORGANIZERS

# Project Scheduler 5

*Scitor's project manager scores with workgroup support but loses points for usability.*

Competing in the Mac project-management-software arena is not as easy as it used to be. Scitor's latest release, Project Scheduler 5, joins the Mac's ever more sophisticated midrange field, which includes such powerhouses as MacProject Pro, Microsoft Project, and Micro Planner Manager. Project Scheduler 5 is a powerhouse in its own right, especially when it comes to workgroup support and multiproject management tools, but its interface and the lack of several important features keep it from winning a top position in the heated project-management race.

## Merge and Consolidate

Project Scheduler 5 (PS5) targets corporate project managers, who must juggle labor and resources to complete projects on schedule and within a budget. PS5's chief enhancement focuses on an important aspect of project-management software: how well it meets the needs of multiple workgroups working on related projects. With PS5, each workgroup can create a separate file for its project. The program can then integrate several related projects into one large project by merging and consolidating the workgroup files. It displays the result as a single network diagram.

A key aspect of this project-integration function is the ability to identify and implement dependencies across the consolidated subprojects, which PS5 handles with its cross-project links. Once PS5 has saved a consolidated file, it can update each of the merged workgroup files with new tasks that define any date dependencies across subprojects. Thus the program is able to flag conflicts that arise when changes in one subproject schedule affect another subproject.

PS5 also features several

 **Project Scheduler 5 version 1.0**  
**Published by:** Scitor Corp., 393  
 Vintage Park Drive, Suite 140,  
 Foster City, CA 94404;  
 415-570-7700.  
**List Price:** \$695.

other new enhancements. Improved resource-table-management tools include a four-level, user-selectable sort function; support for automatic renumbering; and cut, copy, and paste functions. You can modify resource numbers and names without destroying allocations, and you can resize and hide resource-table columns to reduce screen clutter.

## Custom Gantt's

PS5's new, customizable Gantt charts support user-selectable text labels above, below, to the right of, and to the left of the Gantt bar. You can enter project-overview information at the top of the Gantt chart to provide a quick project synopsis, and you can add key project milestones in order to highlight major events. To enhance the appearance of your charts, you can format chart text

with a variety of font styles and sizes.

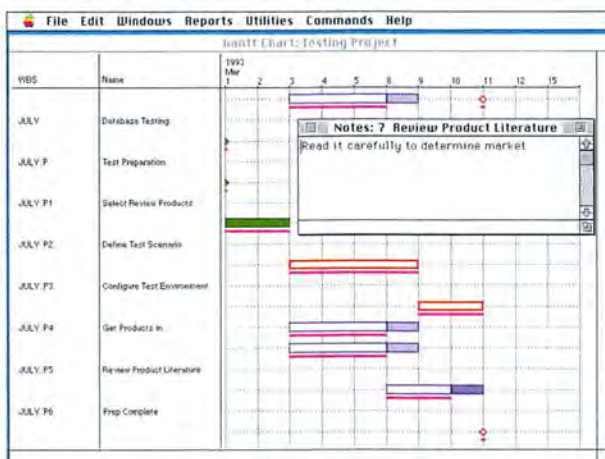
The previous version of Project Scheduler offered support for OBS (Organizational Breakdown Structure) and WBS (Work Breakdown Structure), which allow project managers to organize projects according to functions and departments. New with PS5 is the ability to generate OBS and WBS tree-structure charts automatically.

Compared with its predecessor, PS5 lets you save different sets of preferences for different projects as well as choose from a wider selection of job data (dates, codes, job name, resources, text notes) for each line in a network diagram. PS5 includes a job-priority field that lets you specify a job's priority level during automatic resource leveling. Also new are completed-duration, remaining-duration, baseline-start, and baseline-finish fields to improve project tracking. To make job-list maintenance more flexible, PS5 lets you move, copy, and delete jobs; resize column widths with the mouse; and opt to display only those data fields specific to a particular project.

## Weak Reporting

Scitor has worked to improve Project Scheduler's reporting capabilities, but they remain weak. The new release lets you select and change font styles and sizes, add more header fields to reports, and preview files before printing. You can build a list of canned reports from a handy menu of reporting options and then reuse the reports. You can't, however, create your own forms — a major drawback. And PS5 provides no facility for importing graphic elements to enhance charts.

PS5's lack of flexibility in report creation is a good example of its overall interface deficiencies, which put it at a significant disadvantage, especially next to MacProject Pro's



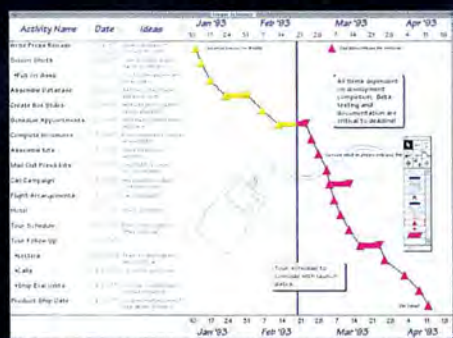
In addition to its new workgroup support tools, Project Scheduler 5 features more-customizable Gantt charts that let you add annotations and other useful information.



# It's about Time!

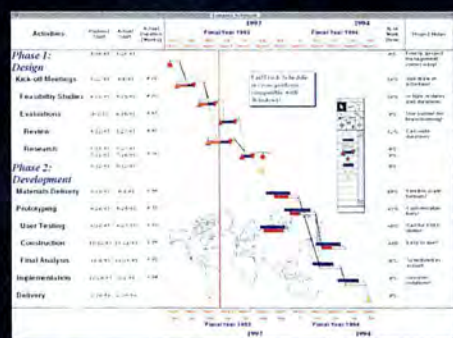


## And Projects!



Project Scheduler 5's primary weakness is its interface, which clearly shows the program's DOS heritage.

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## NEW ON THE MENU REVIEWS



intuitive and clean interface. Project Scheduler was first developed for PCs running DOS, and its heritage shows in the Mac version, which is often awkward to operate. However, because it's available for PCs running DOS or OS/2, PS5 can track projects and update schedules in multiplatform, networked environments. The Mac version is compatible with both PS5 for DOS and PS5XL for IBM's OS/2.

All of the Mac's midrange project-management applications perform similar functions. They all let you define tasks and determine their proper sequence, assign resources (such as people, equipment, and materials) to tasks, and determine the overall length and cost of the project. What differentiates one program from another is interface quality; maturity of features; versatility and latitude of scheduling algorithms; and completeness of resource-allocation, cost-control, and reporting tools.

### No Application Is an Island

PS5 provides multiproject tools that are more powerful than either MacProject Pro's or Microsoft Project's. However, its interface is inferior to both the other programs', and it lacks their near-seamless integration with spreadsheet programs and word processors — applications that are frequently used in project management.

PS5 does not let you define custom data fields, nor does it support System 7's publish-and-subscribe or Balloon Help — all features that MacProject Pro and Microsoft Project provide. In addition, PS5's context-sensitive help is somewhat skimpy.

PS5 provides support for multiproject

analysis features and management functions that Micro Planner Manager lacks, but Micro Planner Manager provides more-powerful and sophisticated scheduling and cost-tracking tools, is more intuitive to use, and offers more-flexible reporting.

Although PS5 can run on any Macintosh, we recommend at least a Mac IICx or Performa 400, 4 megabytes of RAM, System 7, a large hard drive, and at least a 13-inch monitor for displaying charts, task lists, outlines, and tables.

### The Bottom Line

With its newly added support for merging and consolidating multiple projects into a single network diagram, PS5 targets corporate sites where multiple workgroups need to manage and coordinate related projects. Moreover, the Mac version's ability to exchange files directly with PS5 for DOS and OS/2 makes PS5 an attractive midrange choice for multiplatform environments (a Windows version would make it even more attractive).

However, PS5 suffers from a clumsy interface that clearly belies its DOS roots. The program also lacks a flexible report generator as well as support for user-defined data fields and System 7's publish-and-subscribe.

For those who require the ability to merge several smaller projects into one big one and manage cross-project dependencies, Project Scheduler 5 provides more control than any other similarly priced Macintosh program. But be forewarned that we rank the program last in usability among the Mac's midrange project-management tools.

— Don Crabb





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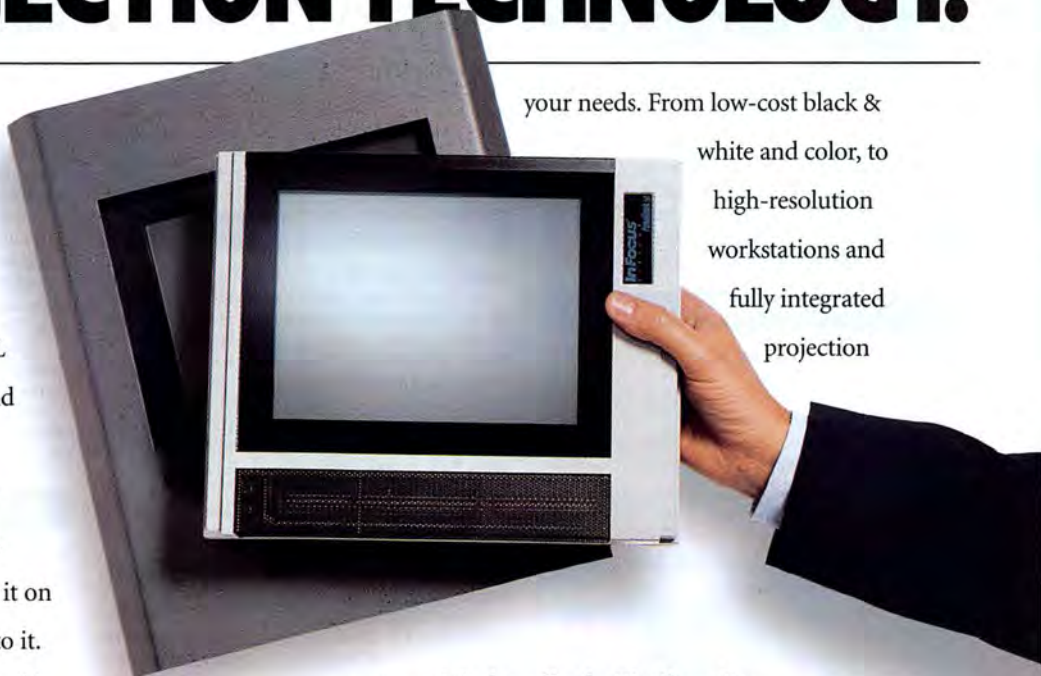
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## FINANCIAL MANAGEMENT

# Peachtree Accounting for Macintosh

*This small-business accounting package is easy on the budget  
but not so easy to use.*

**B**y slashing the price and expanding the capabilities of its low-end accounting package, Peachtree has designed a solid small-business program that can hold its own against rivals M.Y.O.B.; Simply Accounting; and Accountant, Inc. Formerly known as atOnce!, the newly refashioned Peachtree Accounting for Macintosh comprises six integrated modules that can fill just about every accounting need for a price of only \$169.

Several drawbacks, however, detract from the program's overall appeal. Its interface is not always as flexible and streamlined as it could be, and several of its modules are poorly integrated.

## Six in One

In addition to the General Ledger, Accounts Receivable, Accounts Payable, and Payroll modules of the original atOnce! program, Peachtree Accounting for Macintosh (PAM) provides Inventory and Job Costing as well as the ability to create purchase orders and service invoices, reconcile checking accounts, exempt employees from standard payroll taxes, and handle pretax deductions such as 401-K plans. PAM tracks year-to-date payments to vendors so that you can issue 1099 Miscellaneous Income forms. In addition, the program's Print Manager lets you create and save groups of journals, financial reports, and lists and then print them with a single command.

An on-screen palette allows you to navigate among the program's modules. PAM's menus are logically organized and consistent throughout all the modules, although items within menus change as you move from one module to another. The menus are designed to work the way you work: They include Setup, for creating new records; Enter, for transactions; Print, for



**Peachtree Accounting for  
Macintosh 2.0**  
Published by: Peachtree  
Software, Inc., 1505 Pavilion  
Place, Norcross, GA 30093;  
800-247-3224 or 404-564-5800.  
List Price: \$169.

invoices, purchase orders, checks, and reports; and Inquire, for selection lists of customers, vendors, items, employees, general-ledger accounts, jobs, and previous transactions.

PAM's General Ledger module is especially well crafted. In addition to the standard general journal, it lets you create as many as 20 special journals to handle frequently recurring transactions such as credit-card purchases and travel advances. You can configure PAM to let you call up repeating entries with a single command. The program's account-number format is specifically designed to accommodate as many as 99 company divisions plus as many as 99 departments — a useful feature that makes PAM attractive for companies with

multiple locations and those that want to track the profitability of multiple profit centers.

PAM's enhanced Payroll module supports as many as four separate pay rates (regular and overtime) and processes local, state, and federal withholding automatically. In addition, the program supports as many as 20 customized deductions, such as health insurance and cafeteria plans. With the ability to exempt any of these deductions from FICA, state, or local income taxes, PAM is right on target with contemporary trends in employee compensation.

The package comes with a set of standard forms, but you can also create and print customized invoices, purchase orders, reports, and checks. By contrast, its rival Accountant, Inc., requires you to purchase additional forms software for custom forms. PAM's on-screen forms look less like their paper counterparts than those included with M.Y.O.B. or Accountant, Inc., but they're cleanly designed and easy to understand.

Not as well implemented as the General Ledger and Payroll modules is PAM's Inventory Control module, which works like the add-on it is. To set up new items, you must use a button located in the Accounts Receivable module. That's confusing, as is the process of setting up PAM's purchase orders. Rather than set up purchase orders in the Accounts Payable module, as you do with every other accounting package, you must enter PAM's purchase orders in the Inventory Control module.

Another stumbling block is PAM's initial setup procedure. Unlike M.Y.O.B., which presents you with one main setup screen that leads you through the setup process, PAM provides no guidance and no quick and easy way to enter opening balances into the system. It uses a

Peachtree Accounting for Macintosh's General Ledger module streamlines the process of entering recurring transactions.



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#### **True 600 x 600 dpi and Xante's Gray Scale Technology.**

Unlike the new LaserWriter Pro 630, the Accel-a-Writer upgrade provides Advanced Gray Scale capability at 600 x 600 dpi. So, unlike the LaserWriter Pro 630, you will be able to combine 600 dpi text and line art with enhanced halftone images on the same page!

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### **Lightning Fast Speed**

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### **Multi-platform Connectivity**

Simultaneously active AppleTalk, Centronics parallel, and serial interfaces are provided, as well as a SCSI disk interface.

### **Easy Installation**

If you can work a screwdriver, you won't have any problems installing an Accel-a-Writer upgrade. *Imaging Magazine* states "Installation is a breeze and can be done in less than 15 minutes." Just to make sure, Xante includes an installation video.

So, should you buy a new printer or upgrade? Weigh the differences, then call Xante.



	Accel-a-Writer <sup>™</sup> Upgrade	LaserWriter <sup>®</sup> Pro 630	LaserJet <sup>®</sup> 4M
RISC Processor	✖		✓
Virtual Disk Technology	✖ <sup>†</sup>		
Enhanced Gray Scale at 600 dpi	✖		
SCSI	✖	✓	
Price	\$1,195	\$2,529	\$2,399

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<sup>†</sup> Optional

Statistics as of 3/93

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separate entry screen for each general-ledger account.

Fortunately, PAM gives you the option of importing your data. The package includes a separate application called Import/Export, which you launch directly from PAM's File menu. The application's capabilities far surpass those offered by competing packages. In addition to importing and exporting customer data, vendors, items, and general-ledger accounts, Import/Export handles journal entries, complete invoices, cash transactions, bills, purchase orders, checks to vendors, the check register — in short, just about everything you'd ever want.

When it comes to searching for information in the system, M.Y.O.B.'s interface again bests PAM's. PAM lacks M.Y.O.B.'s interactive approach, which uses arrows to direct you to the information you're seeking. With PAM, you must use the Inquire or Setup menus and specify the information you're looking for, in one or more dialog boxes.

Nevertheless, PAM costs less than M.Y.O.B., and M.Y.O.B. doesn't do payroll. PAM also stacks up well when compared with Accountant, Inc., which lists for six times PAM's price. In every respect, PAM is as easy to use as Accountant, Inc., and its interface is cleaner. Although the general-ledger numbering format of Accountant, Inc., is flexible enough to handle divisions and departments, as PAM does, its Payroll module is limited to drawing payroll checks from a single checking account, which makes it an impractical choice for organizations with departments that use separate accounts. On the other hand, Accountant, Inc., offers the advantage of an upgrade path to a multiuser system.

**The Bottom Line**

Peachtree Accounting for Macintosh packs a lot of accounting features into a \$169 package, making it an attractive option for small businesses. With its excellent Payroll module, customizable forms, and support for multiple departments, it outshines the more expensive Accountant, Inc. PAM's only shortcoming is its confusing interface, which can't compete with that of M.Y.O.B. Overall, if you don't require a Payroll module, we recommend M.Y.O.B. If you do need payroll, PAM is a solid choice that's easier on the budget than any other accounting package you'll find.

— Darryl Lewis

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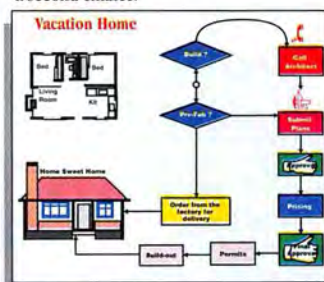


—The MacUser Ultimate Buying Guide 1993

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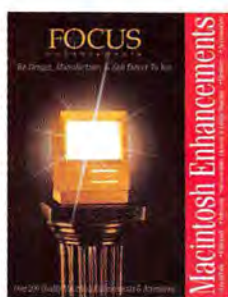
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# connections

## TELECOMMUNICATIONS

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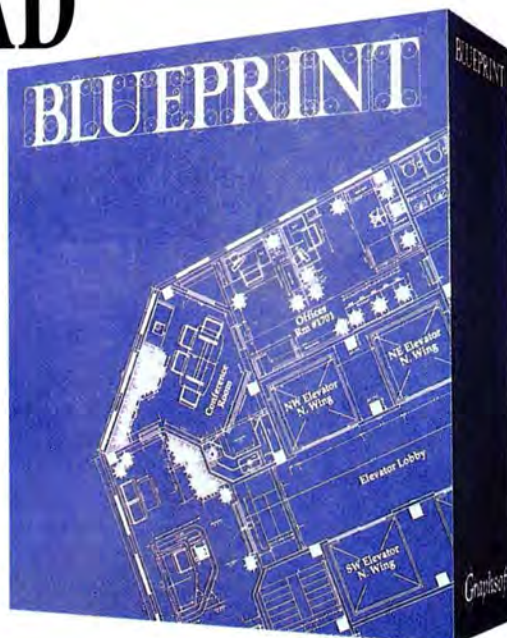
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### 2D CAD:

- |  |  |
|--|--|
| <input type="checkbox"/> smart walls                       | <input type="checkbox"/> fillets                     |
| <input type="checkbox"/> Smart Cursor for locating snaps   | <input type="checkbox"/> editable fills              |
| <input type="checkbox"/> advanced auto-dimensioning        | <input type="checkbox"/> beziers                     |
| <input type="checkbox"/> editable line styles              | <input type="checkbox"/> wall-join                   |
| <input type="checkbox"/> pan by scroll bars or hand        | <input type="checkbox"/> chamfers                    |
| <input type="checkbox"/> color by object or layer          | <input type="checkbox"/> tolerancing                 |
| <input type="checkbox"/> DXF translator - free             | <input type="checkbox"/> unlimited saved views       |
| <input type="checkbox"/> unlimited layers                  | <input type="checkbox"/> hatching                    |
| <input type="checkbox"/> global symbol editing             | <input type="checkbox"/> polylines                   |
| <input type="checkbox"/> on-line prompts                   | <input type="checkbox"/> classes                     |
| <input type="checkbox"/> unlimited drawing space           | <input type="checkbox"/> export EPSF                 |
| <input type="checkbox"/> pick-up and put-down attributes   | <input type="checkbox"/> free Clarisc CAD translator |
| <input type="checkbox"/> selection by properties           | <input type="checkbox"/> round wall caps             |
| <input type="checkbox"/> auto-insert symbols in walls      | <input type="checkbox"/> edit inside groups          |
| <input type="checkbox"/> hierarchical symbol library       | <input type="checkbox"/> scale by layer              |
| <input type="checkbox"/> add & subtract surfaces           |  |
| <input type="checkbox"/> fractional feet and inches option |  |

### 3D CAD:

- |  |  |
|--|--|
| <input type="checkbox"/> mechanical projections          | <input type="checkbox"/> 3D reshape tool   |
| <input type="checkbox"/> orthogonal or perspective views | <input type="checkbox"/> roof & slab tools |
| <input type="checkbox"/> work in wire-frame or solid     | <input type="checkbox"/> 3D smart cursor   |
| <input type="checkbox"/> walkthrough and flyover tool    | <input type="checkbox"/> auto sectioning   |
| <input type="checkbox"/> create 3D view from floorplan   | <input type="checkbox"/> multiple view     |
| <input type="checkbox"/> sweeps, extrusions & meshes     |  |

### Integrated Database/Spreadsheet:

- |   |   |
|---|---|
| <input type="checkbox"/> attach data to graphic objects             | <input type="checkbox"/> create default records |
| <input type="checkbox"/> export reports to text, merge, dif, & sylk | <input type="checkbox"/> auto update reports    |
| <input type="checkbox"/> familiar spreadsheet interface             |   |
| <input type="checkbox"/> search or select by field value            |   |

### Programmability:

- |  |  |
|--|--|
| <input type="checkbox"/> Over 300 powerful routines      | <input type="checkbox"/> no compilation needed     |
| <input type="checkbox"/> generate drawings automatically | <input type="checkbox"/> read & write text files   |
| <input type="checkbox"/> perform engineering analysis    | <input type="checkbox"/> automate repetitive tasks |

## Clarisc CAD \$ 899.00

### 2D CAD:

- |   |   |
|---|---|
| <input type="checkbox"/> smart walls                      | <input type="checkbox"/> fillets        |
| <input type="checkbox"/> Graphic Guide for locating snaps | <input type="checkbox"/> editable fills |
| <input type="checkbox"/> advanced auto-dimensioning       | <input type="checkbox"/> beziers        |
| <input type="checkbox"/> editable line styles             | <input type="checkbox"/> wall-join      |
| <input type="checkbox"/> pan by scroll bars               | <input type="checkbox"/> chamfers       |
| <input type="checkbox"/> color by object only             | <input type="checkbox"/> tolerancing    |
| <input type="checkbox"/> DXF translator - extra charge    | <input type="checkbox"/> 9 saved views  |
| <input type="checkbox"/> unlimited layers                 | <input type="checkbox"/> hatching       |

### 3D CAD:

none

### Integrated Database/Spreadsheet:

none

### Programmability:

none

## Blueprint 4 \$ 295.00

### 2D CAD:

- |  |  |
|--|--|
| <input type="checkbox"/> smart walls                     | <input type="checkbox"/> fillets               |
| <input type="checkbox"/> Smart Cursor for locating snaps | <input type="checkbox"/> editable fills        |
| <input type="checkbox"/> advanced auto-dimensioning      | <input type="checkbox"/> beziers               |
| <input type="checkbox"/> editable line styles            | <input type="checkbox"/> wall-join             |
| <input type="checkbox"/> pan by scroll bars or hand      | <input type="checkbox"/> chamfers              |
| <input type="checkbox"/> color by object or layer        | <input type="checkbox"/> tolerancing           |
| <input type="checkbox"/> DXF translator - free           | <input type="checkbox"/> unlimited saved views |
| <input type="checkbox"/> unlimited layers                | <input type="checkbox"/> hatching              |
| <input type="checkbox"/> global symbol editing           | <input type="checkbox"/> on-line prompts       |
| <input type="checkbox"/> polylines                       | <input type="checkbox"/> export EPSF           |
| <input type="checkbox"/> unlimited drawing space         | <input type="checkbox"/> scale by layer        |
| <input type="checkbox"/> file compatible with MiniCad+   | <input type="checkbox"/> classes               |
| <input type="checkbox"/> fractional feet & inches option | <input type="checkbox"/> round wall caps       |
| <input type="checkbox"/> auto-insert symbols in walls    | <input type="checkbox"/> edit inside groups    |
| <input type="checkbox"/> hierarchical symbol library     |  |
| <input type="checkbox"/> add & subtract surfaces         |  |
| <input type="checkbox"/> pick-up and put-down attributes |  |

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CIRCLE 208 ON READER SERVICE CARD.



**QUICK CLICKS**



## Peace of Mind



If you suspect some of your Mac's hardware of going haywire, you may want Peace of Mind, a hardware-diagnostic utility from Polybus Systems. It can tell you more than you'll ever want to know about the condition of your Mac.

The program runs a comprehensive set of 192 tests that check your Mac's CPU, RAM, ROM, PRAM, floppy and hard disks, input device (mouse or trackball), keyboard, sound components, system clock, and NuBus cards. It also runs a multitude of benchmark tests plus printer and modem tests.

You can use Peace of Mind in either Normal or Power User mode. In Normal mode, you click on icons to select categories of tests you want Peace of Mind to run, such as Memory or Disks/SCSI; instruct the program to run either all the tests in the selected categories or just a predetermined Quick Test subset, by toggling the Quick Test/Full Test button; and then click on the Start button to run the tests. The Power User mode has a less graphical interface and is more powerful than the Normal mode. It lists all the tests so you can select specific ones to run in each testing category. The Power User mode also displays more-detailed test results than the Normal mode does.

The results of Peace of Mind's hardware-diagnostic tests can be viewed on-screen and saved as a text file. Although these results might not be meaningful to all users, the manual does a good job of explaining the program and the nature of the tests, and the phone tech support, although not toll-free, is quite competent.

We found Peace of Mind to be relatively quick and easy to use, given all that it does. Running the full set of tests — including user-interactive tests for the printer, keyboard, speaker, microphone, mouse, and monitor — took approximately 35 minutes on our Quadra 700.

A few quibbles: Peace of Mind does not include loop-back plugs for the printer and the modem serial-port tests, as does Maxa's Snooper. Instead, the manual suggests connecting a standard printer cable, which many people don't have, between the printer and modem ports. Also, if your Mac has a Radius Rocket accelerator

card, you need to disable it in order to run Peace of Mind's tests.

These quibbles aside, Peace of Mind is a very helpful piece of software. It may save you unnecessary trips to the dealer or at least help you uncover hardware problems without driving yourself berserk in the process.

Polybus Systems Corp., 150 Westford Road, Tyngsboro, MA 01879; 800-695-4239 or 508-649-7396. Version 1.2.1. \$149.

— Tom Petaccia



## SafeLock

If you want a truly reliable way to keep the contents of your hard disks unavailable to unauthorized users, stay away from SafeLock.

Our doubts about the program began at installation. To install SafeLock, you drag it into the System Folder, restart your Mac, open the control panel, specify which SCSI drives to protect, and then enter a password. SafeLock performs password verification and is case-sensitive, but you can't protect disk partitions or assign different passwords to different disk volumes. And because hard-disk protection doesn't begin until you've restarted or shut down, your system is unprotected if an error occurs beforehand.

Once we'd managed to get SafeLock installed, we found its security procedures simplistic and annoyingly implemented. Instead of encrypting data or toying with boot blocks, SafeLock locks the hard disk and makes files and folders invisible upon restart or shutdown. During startup, SafeLock requests a password even if you don't intend to use the protected volume. Get the password wrong three times, and the Mac shuts down; enter it correctly, and SafeLock unlocks the drive and makes all the files visible — including some files rendered invisible by other applications for good reason. (Take it from us: Accidentally trashing your Finder's icon resources is *not* something you want to be able to do). The locking and unlocking process is far from instantaneous, by the way; it can be a multiple-minute process with a large hard drive.

We found SafeLock's security absurdly easy to bypass: Just prevent the SafeLock control panel from loading at startup (for example, by holding down the Shift key when you boot). Granted, the Finder

reports zero items on the "protected" volume, but the space consumed by the invisible files betrays their existence — and if you select the Open option within the application that created one of these invisible files, the file shows up in the file-selection dialog box, making it easy to open (a problem Trend promised to fix "immediately" when we found it in version 1.0.1 but that wasn't fixed in 1.0.2). A further problem is that nothing prevents a naive or malicious user from reformatting the disk and destroying the invisible files.

To make matters worse, Trend gives out "backdoor" passwords over the phone to anyone who can provide a valid serial number, receipt, name, and company of a registered user. This practice is a network administrator's nightmare: Armed with a backdoor password, a user can defeat SafeLock on *any* drive for the remainder of the day.

Given all of SafeLock's problems (and the fact that there's a decent freeware alternative, John Bascombe's Privacy), we see no reason for anyone to buy the current version.

Trend Micro Devices, Inc., 2421 W. 205th Street, Suite D-100, Torrance, CA 90501; 800-228-5651 or 310-782-8190. Version 1.0.2. \$49.

— Owen W. Linzmayer



## Lemmings



Even Dr. Jack Kevorkian might find it hard to resist saving the cute little suicide-prone creatures in Lemmings, a new-to-the-Mac game from Psygnosis, Ltd.

The object of the game is to guide the wandering lemmings — or at least, a certain percentage of them — safely home. The percentage of lemmings you must save from self-annihilation increases with the level of difficulty you choose. The journey is a race against time, and every screen is cluttered with deadly obstacles. The worst obstacle, though, is the lemmings' lack of any sense of self-preservation; once one lemming has bought the farm, the rest tend to follow.

Because you can't control the lemmings directly, you have to help them indirectly, by equipping individual lemmings with the skills they need to clear a safe path for their fellow creatures. To assign a skill to a lemming, you select it from the icons at the bottom of the screen and then click on



a particular lemming. You can turn the lemming into a blocker, climber, floater, bomber, bridge builder, or one of three types of diggers. Each skill plays a part in helping the lemmings avoid the pits, water, mountains, electronic miasma, flame throwers, and other obstacles in a variety of environments.

Your allotment of lemmings, skills, and time varies as you reach higher levels in the game. To succeed, you must be quick with the mouse and creative in using what's given to you — bearing in mind that some obstacles require multiple skill assignments. If your best efforts aren't working, though, you may have to restart the current screen with the Nuke button, which causes the lemmings to combust spontaneously into confetti.

Although nuking the lemmings is a helpful outlet for frustration, you'll get more long-term satisfaction from saving the critters and advancing to higher levels in this challenging and addictive game.

Psygnosis, Ltd., 29 Saint Mary's Court, Brookline, MA 02146; 617-731-3553. Version 1.4.2. \$59.99.

— Roman Victor Loyola



## DragInstall



Distributing files to other people on floppy disks can be complicated when there's a lot of explaining involved — how to decompress the files, where to put each one (in which folder), and so on. You can get around the explaining by building an application that installs the files itself, but Apple's Installer system isn't exactly user-friendly. Fortunately, there's an alternative: DragInstall.

DragInstall combines the installation control of Apple's Installer system with the compression capabilities and ease of use of archiving utilities such as StuffIt, DiskDoubler, and Compact Pro. It's particularly useful for consultants, small developers, and corporate managers who need to empower users to perform tricky software installations themselves.

Installer applications are easy to construct in DragInstall's Builder application, which displays files and folders in a hierarchical listing similar to System 7.0's By Name view. You specify the files and folders to be installed as well as the appropriate rules for installing them under particular conditions (for example, if a certain folder already exists, you can

instruct that it be emptied or deleted before new files are installed). You can also specify the size of the installation disks and how much free space to leave on the first disk (if you want to include release notes in a separate file, for example). With this information, the Builder creates an installer application and a file for each additional installer disk.

You can further customize your installers by associating your own icons with the installations, setting your own startup screen for the installer applications, and providing "Help" and "Read Me" text. The instructions for an installer set are generally pretty simple — for example, you might tell users to insert the first disk, double-click on the installer icon, drag an installation icon to the appropriate volume, feed in other disks as needed, and quit the installer when done. In case you need more flexibility, DragInstall lets you prompt users for a destination folder or even provide several alternative installation options in the same installer set.

DragInstall's only serious flaw is its compression. Although it achieves a respectable degree of compression, it performs the compression much more slowly than an archiving utility could. Because DragInstall can't compress in the background, you might be stuck waiting 15 minutes or longer while the program builds an installer. Fortunately for recipients of DragInstall installer packages, decompression occurs significantly faster.

Although its compression isn't exemplary, DragInstall's features and ease of use make the program an extremely attractive alternative to Apple's complicated Installer system.

Ray Sauers & Associates, Inc., 1187 Main Avenue, Suite 1B, Clifton, NJ 07011; 201-478-1970. Version 1.5. \$300 for noncommercial use; commercial-use price is based on estimated sales volume.

— Louis E. Benjamin, Jr.



## 7th Heaven



If you like to jazz up your system but hate to deal with extension and control-panel conflicts, check out 7th Heaven. Each utility in this System 7.0-oriented collection is a stand-alone application, so it won't cause messy conflicts.

A pattern generator called Chameleon is the flashiest item of the collection — so

flashy, in fact, that it's being spun off into a package of its own. It lets you break the 8-x-8-pixel limitation for desktop patterns and use patterns of as many as 128 pixels on a side. It comes with a library of impressive, ready-made backgrounds that are easy to preview and install. Creating or editing a pattern isn't quite so easy, despite a set of basic painting tools and a superb replacement for the standard Color Picker, because the lack of a wraparound-editing feature makes it difficult to match the edges of a pattern. But given the artistry of the supplied patterns, ease of editing won't be a major concern for most users.

A second utility, called FinderExpress, speeds up some desktop copy procedures almost magically. Our system took 50 seconds to copy a test file from an internal drive to an external drive without FinderExpress and did the same task in only 9 seconds with the program's help. However, FinderExpress didn't affect the speed of our PowerBook-to-desktop-Mac transfer with System 7 file sharing. We didn't gain any extra speed copying to and from our AppleShare file server either, although Logical Solutions claims a 10-to-50-percent speed increase over a network.

But wait, there's more: Informant is a terrific little utility that checks out and reports on your Mac configuration, including general hardware, system software, control panels and extensions, SCSI devices, and even NuBus cards. Another utility, called FileMapper, lets you specify what should happen when you double-click on a document and its application can't be found.

The rest of the utilities provide minor eye-candy features. Red Alert offers colorful alternatives to the standard alert icons. Calendar provides stunning pictures for each month, but you can make notes only for a month instead of for a specific day — and there's no Undo available in the text window. Vector Plasma is a screen saver you select from the Apple menu; its display is surprisingly amateurish in an otherwise dazzling package.

At \$99, this package is a little expensive, in that only four of the items are particularly useful. But who pays retail these days? At a discounted price, 7th Heaven still isn't Nirvana, but it's a nice place.

Logical Solutions, Inc., 2124 University Avenue, St. Paul, MN 55114; 612-659-2498. Version 2.5. \$99.

— Sharon Zardetto Aker



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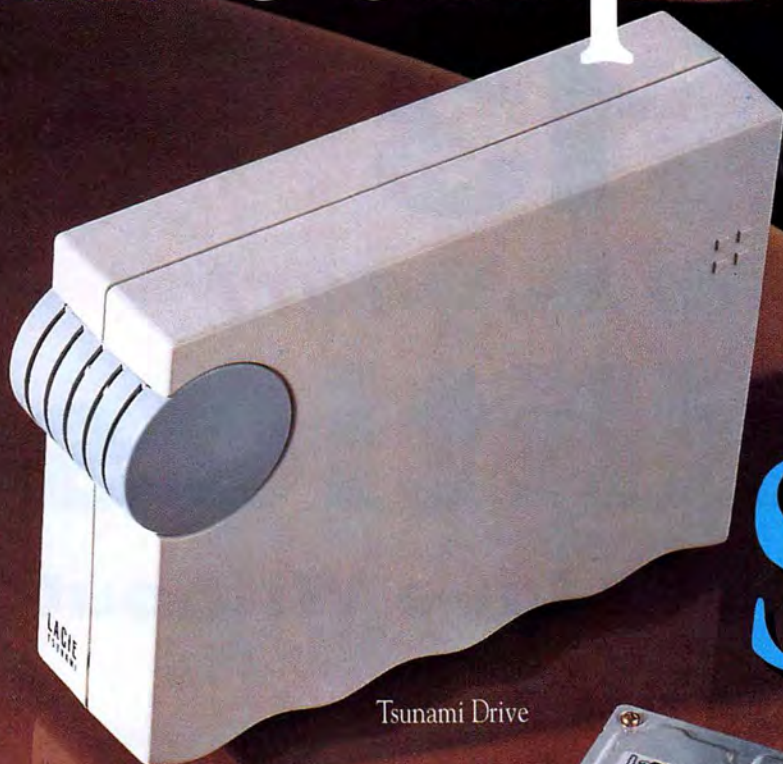
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CIRCLE 165 ON READER SERVICE CARD.



# 13

## *Work-Smart*

# Utilities

### You Can't Live Without

*MacUser picks  
the programs  
guaranteed  
to make you  
and your Mac  
a lot more  
productive.*

**S**omewhere on your hard disk (or maybe it's on one of those SyQuest cartridges), there's a mystery file containing some figures from last year's third-quarter sales meeting and a really bad joke about Rob Lowe. All you have to do is find that file, remove the joke, check the spelling, rename it, save it as a Word for DOS file so your boss can read it, and then send a couple of copies to your coworkers via E-mail. The only problem is it's taken you all morning to do just that, and you're not getting much else done.

If you think there's a better way to deal with such tedious tasks, you're right. Several programs — often called utilities — can take care of routine housekeeping tasks on your Mac and let you get on with the real brain work. But there are so many extensions, program additions, and utilities that promise to make you more productive that it's almost impossible to know where to start looking. To help you out, we've taken a look at the current crop of utilities and found the best — the products we think most Mac users should have or should at least consider purchasing. They're sure to make you whistle while you work.

**BY GREGORY WASSON**





## Improve System 7

### Now Utilities

★★★★½

Now Software  
319 S.W. Washington  
11th Floor  
Portland, OR 97204  
503-274-2800  
Version: 4.01  
List Price: \$129

### Now Utilities

If you've upgraded to System 7, one of the best programs you can purchase to enhance your working environment is Now Utilities, a collection of seven utilities from Now Software that won *MacUser's* Editors' Choice Award for the best utility in both 1991 and 1992. Now Utilities' crowning glory is Super Boomerang, a control panel that adds a special menu to most standard Open dialog boxes, letting you search for files, create new folders, go to specific folders, and a lot more. Now Utilities' other components let you control the loading order of your extensions; make your Apple menu hierarchical; simplify the Font menu by unifying font families; automatically save files at preset intervals; manage graphics, text, sounds, and QuickTime movies in a special scrapbook; and create a report of your Mac's hardware and system-software configuration.

### StuffIt Deluxe

StuffIt Deluxe, from Aladdin Systems, is a compression utility that can help save space on your hard disk by making files take up less room, but it has other useful features as well. If you're transferring files between different computers or systems, StuffIt lets you deal with a variety of non-Mac compression formats, including ZIP, tar, Arc, and BinHex4. So if you ever receive a ZIP archive from a DOS colleague, StuffIt will let you get at the goods inside.

The program comes with a couple of useful add-on extensions: Magic Menu lets you stuff or unstuff files from the Finder, and SpaceSaver can transparently compress certain files in the background to give you maximum disk space with minimum inconvenience.

### Square One

If you hate digging through folders, subfolders, and subsubfolders for your favorite files, you'll love Square One, from Binary Software. This dandy application for System 7 provides the best icon-based approach to file management and program launching we've seen.

Square One displays an elegant floating palette in which you install applications, DAs, and control panels that appear as iconic buttons (double-click on an icon to launch an application). You can attach documents to any button — just click on a button, and you'll see any attached documents in a scrolling list beneath the button area. Even better, you can create separate Square One palettes, so you can have one for everyday use and others for special projects that contain only files relevant to those projects.



## Access Your Files Better

### Square One

★★★★

Binary Software  
2210 Wilshire Blvd.  
Suite 900  
Santa Monica, CA 90403  
310-582-8293  
Version: 1.5  
List Price: \$74



## Put the Squeeze on Your Files

### StuffIt Deluxe

★★★★½

Aladdin Systems  
165 Westridge Drive  
Watsonville, CA 95076  
408-761-6200  
Version: 3.0.5  
List Price: \$120



## Utilities



### Find Files (and Text) Fast

#### Alki Seek

★★★★

Alki Software  
300 Queen Anne Avenue N.  
Suite 410  
Seattle, WA 98109  
206-286-2600  
Version: 2.1  
List Price: \$39.95



### Automate Time- Consuming Tasks

#### QuicKeys

★★★★

CE Software  
1801 Industrial Circle  
West Des Moines, IA 50265  
515-224-1995  
Version: 2.1.3  
List Price: \$149

#### Alki Seek

Using System 7's Find command is a clumsy and inefficient way to locate files. A better solution is to use Alki Software's Alki Seek, a DA that lets you quickly search for files on your Mac or on attached hard drives. You can search by filename, application type, or creation or modification date as well as for files that meet one criterion but not another and so on. Found files are listed in a window, and you can then sort and move files around in various ways. You can even browse through and copy text out of documents without opening them.

Even better, Alki Seek can search the *contents* of files, letting you find, for example, all the Word documents that contain the word *mystery*. And it supports a sophisticated search technique known as pattern matching (or GREP), letting you find such things as phone numbers that appear at the beginning of a paragraph.

#### DiskTop

DiskTop, from CE Software, is a nifty utility that lets you search multiple hard disks, using criteria such as characters in a filename and type of file. You can also create new folders and copy, move, and even delete files without returning to the Finder, making it a must for anyone still using System 6 without MultiFinder.

System 7 users will also find a lot to like: DiskTop's Find feature is better and faster than anything Apple has dreamed up, and it has some great advanced features too. You can, for example, edit a file's Type and Creator codes or change Finder flags (internal file switches that control whether a file is locked, invisible, or on the desktop). DiskTop also lets you see and manipulate invisible files, such as the System 6 Desktop file.

#### QuicKeys

QuicKeys, from CE Software, is a control panel that lets you automate tedious tasks — complex series of keystrokes, mouse actions, and menu and dialog-box choices — by building *macros*. After building a macro, you assign a single key or key combination to it. You can then do such things as format boilerplate text every time you press that particular key combination.

QuicKeys is more than just a macro maker, however. It can also maintain a collection of boilerplate text, act as an application or document launcher, function as a glossary in a word processor, display text in a mini text editor, and let you zip off to a specific folder in the standard file dialog box.

But just having this program is not enough — you should also know how to use it effectively. The best way to do that is to purchase *The Little QuicKeys Book*, by Steve Roth and Don Sellers (Berkeley, California: Peachpit Press, 1991). For \$18.95, you can learn QuicKeys techniques and strategies that are revelations, even to longtime QuicKeys users.



### Find, Move, and Rename Files Quickly

#### DiskTop

★★★★

CE Software  
1801 Industrial Circle  
West Des Moines, IA 50265  
515-224-1995  
Version: 4.0.2  
List Price: \$99.95



# Security software that's tough on intruders. Not on you! Citadel.

*Datawatch Citadel with Shredder™ is a Macworld Magazine Editors' Choice among security products because it's a complete, easy-to-use disk and file security solution.*



a secure document shredder. Citadel also lets you lock the Mac screen after a pre-selected period of time to guard your system from browsers and tamperers.

## Easy-to-Use

Though Citadel has all the security features you need, you

## Air-tight Disk and File Security



Citadel offers a full array of security features that let you protect your Mac and its data from unauthorized access. Citadel lets you lock hard drives, and lets you lock or completely disable floppy drives.

Citadel lets you encrypt individual files and folders, and its Shredder feature turns the Macintosh trash can into

won't find it hard to set up or use. In fact, Macworld magazine called it "Feature packed; easy to use" (*Macworld*, 6/92), and chose it as its Editors' Choice among security products (*Macworld*, 2/93).



So to protect your precious data without a lot of hassle, see your favorite retailer for Citadel today. Or call us for your free *Citadel Overview* at (919)490-1277, ext 325.



Datawatch Corporation  
Triangle Software Division  
PO Box 51489  
Durham, NC 27717  
(919) 490-1277 ext. 325  
FAX: 490-6672  
BBS: 419-1602 (8,1,N)



## Utilities



### Keep Track of Appointments

#### *In Control*

★★★★½  
Attain Corp.  
48 Grove Street  
Somerville, MA 02144  
617-776-1110  
Version: 2.0  
List Price: \$129.95

#### **In Control**

Toss that overstuffed day planner, and start organizing appointments and making to-do lists on your Mac. Attain's *In Control* (a 1992 *MacUser* Editors' Choice Award winner) manages any sort of list you can imagine. It can help you prioritize, categorize, sort, and automatically enter items, and you can print sophisticated reports and calendars. The program automatically alerts you about impending deadlines.

*In Control* also includes Portfolio's DynoPage Lite program, which lets you print *In Control* lists as properly formatted pages for popular day planners such as Day Runner, Day-Timer, Filofax, and Franklin.

#### **Suitcase**

If you find yourself forever digging around in your System Folder to install or remove fonts (or if you're a System 6 user still struggling with Font/DA Mover), stop wasting your time and check out *Suitcase*, from Fifth Generation Systems. *Suitcase* lets you move your fonts out of the System Folder — simply store your fonts together in a folder anywhere on your hard disk, and *Suitcase* makes them available to all your applications.

*Suitcase* lets you create font sets, so that if you use certain fonts only on a specific project, you can save those fonts as a *Suitcase* set and open it only when you need those fonts. *Suitcase* also manages Fkeys and sound files, but its font handling is its key selling point.



### Manage Fonts Easily

#### *Suitcase*

★★★★½  
Fifth Generation Systems  
10049 N. Reiger Road  
Baton Rouge, LA 70809  
800-873-4384  
504-291-7221  
Version: 2.1  
List Price: \$79

## Savvy Travelers

On the road with your PowerBook? Here are three must-have utilities that can speed you on your way (of course, most of the programs described in the main story can also make your journey easier). For more on PowerBook-only products, see "Traveling Companions: PowerBook Utilities," May '93, page 90. For more on traveling with your PowerBook, see *The PowerBook Companion*, by Rich Wolfson (Reading, Massachusetts: Addison-Wesley Publishing Company, 1992), and *PowerBook: The Digital Nomad's Guide*, by Andrew Gore and Mitch Ratcliffe (New York: Random House Publishing, 1993).

#### **AppleTalk Remote Access**

With AppleTalk Remote Access (ARA), files on your office Mac (or server, or any other remote Mac with ARA installed) are just a phone call away — all you need is a PowerBook modem and access to a phone jack. Using ARA is like connecting to an on-line service, but in this case, the service is actually your desktop Mac and all of its files, which you can copy to your PowerBook, move around, and delete. You can even access printers and other peripherals connected to the remote Mac. ARA used to come packaged with every new PowerBook, but this is no longer the case, so you have to pay to get it, but it's worth it. Warning: You need a fast modem (9,600 bps or faster) to use ARA — it's slow as sap with slower modems.

Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; 408-996-1010. \$199.

#### **CPU**

CPU (Connectix PowerBook Utilities) lets you control several vital aspects of your PowerBook — battery power, LCD-screen lighting, hard-disk spin-down, processor functions, and sleep — from a single control panel. It also has a security feature that keeps your files secure if you walk away for a few moments and an option that prolongs battery life by completely discharging the battery before you recharge it. Version 2.0 adds file synchronization, so you can update files common to your PowerBook and your desktop Mac. Many companies are rushing to bundle special PowerBook-utility programs, but to date, CPU is the best of the bunch.

Connectix Corp., 2655 Campus Drive, San Mateo, CA 94493; 415-571-5100. \$99.

#### **SCSI Probe**

Easily managing SCSI devices such as hard drives, magneto-optical drives, or removable-cartridge drives is important for any Mac user, but it's essential for PowerBook users who need to quickly pull data off disks at various locations. SCSI Probe is a free utility that makes mounting virtually any SCSI storage device a snap. It's available from on-line services such as America Online; CompuServe; and *MacUser's* on-line service, ZiffNet/Mac, as well as from user groups. On ZiffNet/Mac, it's available as file SC5IPR.SIT in Library 3 of the Download & Support Forum (GO ZMC:DOWNTECH).



**“I DON'T NEED (tick) YOUR  
DATA (tick) PROTECTION SOFTWARE (tick).  
I'VE HAD MY MAC (tick) FOR  
YEARS AND (tick) IT  
HASN'T CRASHED (tick) YET.”**

Not to alarm you or anything. But if a lot of wishful thinking is all that's standing between you and a Mac meltdown, you may want to check out a more proven method of protection.

We suggest the Norton Utilities for Macintosh v2.0. It both prevents data loss and gives you the most effective



*Without us, one crash can ruin your whole day.*

data recovery features available. In other words, it's like giving your computer its own personal bomb squad.

For starters, let's talk prevention. The Norton Disk Doctor hunts down potential problems and lets you squash them before they become actual nightmares. Plus, Speed Disk defragments files and boosts performance of your hard disk, making data loss less likely in the first place. So far, so good.

Now, the recovery part. Our FileSaver feature keeps a record of vital disk information, which helps



*From  
Peter Norton, the  
leader in  
Macintosh utilities.*

you rescue files if you happen to lose or delete them. On top of that, you get automatic backup. It's total security like this which has helped Norton Utilities become the best-selling data protection and recovery software in the world.

To learn more, dial FAST FAX 1-800-554-4403 and select option 1, document 411. (For information on easy network installation, choose option 1, document 481.) Better yet, pick up Norton Utilities at your local dealer for about \$149.\*

You should probably do it today, though. Before your luck runs out.

**THE NORTON  
UTILITIES**  
FOR MACINTOSH  
**SYMANTEC.**

\*Suggested retail price. Actual price may vary. All names are trademarks of their respective companies. For more information in Europe, call 31-71-353111. In Australia, call 612-579-6577. In Canada, call 1-800-465-2266. Everywhere else outside U.S., call 408-252-3570. ©1993 Symantec Corporation.



## Utilities



### Access Unreadable Files

#### CanOpener

★★★★

Abbott Systems  
62 Mountain Road  
Pleasantville, NY 10570  
800-552-9157  
914-747-4171  
Version: 2.0  
List Price: \$125



### Add a Universal Spelling Checker

#### Thunder 7

★★★★

Baseline Publishing  
1770 Moriah Woods Blvd.  
Suite 14  
Memphis, TN 38117  
800-926-9677  
901-682-9676  
Version: 1.5.2  
List Price: \$99.95

#### CanOpener

CanOpener, from Abbott Systems, is a universal file opener that ends the frustration of not being able to open a file, perhaps because you don't have the correct application or because the file is damaged. Simply select a file in CanOpener's main window, and the utility attempts to locate text and other data, such as sound resources and graphics, within the file. Anything you can view in CanOpener you can copy to the Clipboard so you can save at least part of the file. CanOpener supports ASCII text (meaning that you can search a word-processed or DTP document for text, but you won't see the formatting) as well as graphics in EPS, ICON, MacDraw II, MacPaint, PICT, and TIFF formats.

#### Adobe Type Manager and SuperATM

Two outline-font technologies exist for the Mac — TrueType and PostScript Type 1 — and they each make it possible to view text on-screen and print it in any point size without having the corresponding bit-map point sizes cluttering up your system. TrueType is integrated into the Mac operating system, but if you need to deal with PostScript Type 1 fonts (still the standard in professional printing circles and at service bureaus), you need Adobe Type Manager (ATM).

With ATM installed, you keep bit maps in only one or two point sizes (10 and 12 point, say). When you format text in some other point size, ATM flies to the rescue and creates the new point size almost instantly and displays the text in clean, crisp letters. Because you no longer have to store on your hard disk bit maps for every point size you want to use, you free up a tremendous amount of disk space.

Adobe has added a twist to ATM with the introduction of SuperATM, which adds font-substitution capabilities to the original features of ATM. This means that if you receive a document that uses an Adobe Type 1 font you don't have, SuperATM will substitute a font that maintains the original font's character widths and dimensions so that line widths and breaks remain the same (with standard ATM, the Mac simply substitutes Courier). SuperATM includes Adobe Type Reunion and the Adobe Type On Call CD-ROM, with more than 1,350 Adobe Type 1 fonts, which you can buy as needed.

#### Thunder 7

One of the first things you discover as you add software to your hard disk is that virtually every program, from word processors to some graphics programs, features spelling checkers that install their own dictionaries. Wouldn't it be great if you could chuck all these separate spelling dictionaries and just use one universal spelling checker? The good news is that you can, with Thunder 7, from Baseline Publishing.

This popular control panel adds a special Thunder 7



### Have Better-Looking Type

#### ATM

★★★★

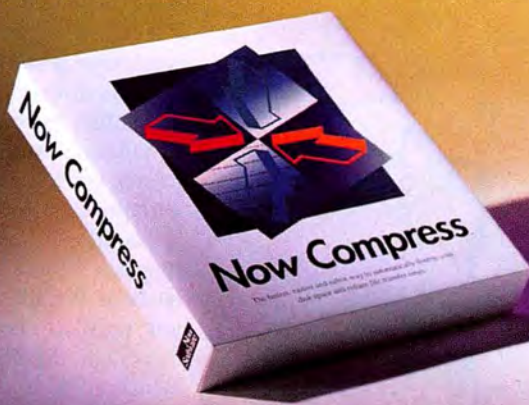
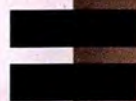
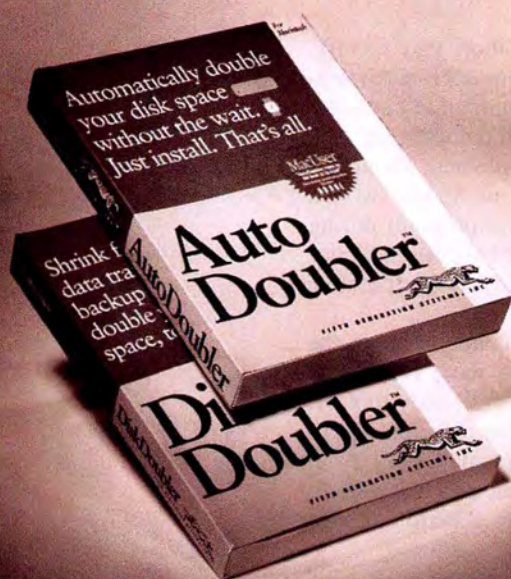
Adobe Systems  
1585 Charleston Road  
Mountain View, CA 94039  
800-833-6687  
415-961-4400  
Version: 3.0  
List Price: \$99

#### SuperATM

★★★★

Adobe Systems  
1585 Charleston Road  
Mountain View, CA 94039  
800-833-6687  
415-961-4400  
Version: 3.5  
List Price: \$149





## LOOK! IT'S COMPRESSING EVEN BEFORE IT'S OUT OF THE BOX.

Ever wonder why you had to buy one compression program to automatically free up disk space and another to let you shrink files on demand? Ever suspect it was because somebody wanted to bill you twice?

How cynical of you.

Fortunately, Now Compress combines both functions in one rather amazing package. It can double the size of your hard drive by compressing your data smaller than AutoDoubler™, DiskDoubler™ or any other product. Additionally, it creates tiny archives that drastically reduce the time it takes to transfer files throughout a network.

What's more, it decompresses so quickly you won't notice when you're working with compressed data.

In the Now Software tradition, we've humanized the interface to make it far simpler to use than other compression products.

File Name	Original	Compressed	Saved	Status	Creator	Type	Label	Last Modified
1992 Year-end Report	10.0K	5.0K	42%	Compressed: Faster	MSVD	VGEN	None	Fri, Jan 29, 1993
Expense Report/Jan 93	62.5K	19.5K	69%	Compressed: Faster	B0B0	CVSS	None	Thu, Feb 25, 1993
Healthdays	43.5K	9.4K	78%	Compressed: Faster	FHA3	EP5F	None	Thu, Aug 27, 1992
Newsletter/Jan 93	100.2K	25.4K	75%	Compressed: Smaller	ALD4	ALB4	None	Fri, Sep 11, 1992
Product Descriptions.doc	254.7K	—	—	Archived	NCse	APPL	None	Thu, Feb 25, 1993
Q1 '93 Objectives	6.5K	—	—	Don't Compress: Item	MSVD	VGEN	None	Mon, Feb 1, 1993
Team Photo.TIF	235.5K	36.4K	84%	Compressed: Faster	T8F	T8F	None	Fri, Jan 15, 1993
Compressed: 5 of 7	712.9K	350.0K	50%					

Note the Inspector window on the left. It lets you see the status of any file, folder or

disk, and perform any compression operation with a click of your mouse. Now Compress. It's the fastest, safest, most useful compression package you can get.

For the full, non-compressed, story call us at 1-800-237-3611. Or talk to a dealer.

**Now  
Software**



## Utilities



### Read Any Word-Processing File

#### MacLinkPlus/Translators

++++  
DataViz Corp.  
55 Corporate Drive  
Trumbull, CT 06611  
203-268-0030  
Version: 7.02  
List Price: \$169

spell-checking menu to any application you specify. Thunder can interactively check your spelling as you type, or you can check an entire document in one pass. You can also check selections within a document. You can create custom dictionaries to supplement Thunder's own dictionary, which has 50,000 or 86,000 words, depending on how you configure the program during installation. And when you add a word to custom dictionaries, you are given the option to add all of its possible variations as well.

Thunder 7 includes a glossary feature, so using the program is an easy way to enhance word processors (such as WriteNow) that don't have this handy tool. (If you need to check medical, legal, or technical documents, try Spelling Coach Professional [\$199], from Deneba [305-596-5644], a spelling checker that is similar to Thunder 7 without the glossary function and includes specialized dictionaries.)

#### MacLinkPlus/Translators


For those who have to deal with word-processing files in various formats or from various computer platforms, there's probably no other software package as valuable as DataViz's MacLinkPlus/Translators. This application with file-translation filters can identify numerous Mac, DOS, Windows, and other formats and lets you select the format into which you want the file translated. The package also supports several graphics and spreadsheet formats.

Although most word processors already support some file-conversion capabilities, MacLinkPlus/Translators does it better. In many cases, it lets you retain far more formatting than would otherwise be possible.

#### AccessPC

AccessPC is a control panel/extension from Insignia Solutions that makes transferring files from DOS media to your Mac as easy as popping a floppy into the floppy drive.

AccessPC fools FDHD (floppy disk, high density) SuperDrive-equipped Macs into mounting a DOS floppy on the desktop. You can then open the floppy and simply drag files on or off — just as you would with a regular Mac-formatted floppy disk.

You can also use AccessPC to format floppies as DOS disks; assign Mac applications (such as Microsoft Word or TeachText) to handle DOS files; mount the faux hard-disk files created by SoftPC (another Insignia program that lets you run DOS sessions on a Mac); and mount, initialize, and partition DOS-formatted removable media such as Bernoulli or SyQuest cartridges. 



### Read DOS Disks on Your Mac

#### AccessPC

++++  
Insignia Solutions  
526 Clyde Avenue  
Mountain View, CA 94043  
800-848-7677  
415-694-7600  
Version: 2.0  
List Price: \$99.95

Gregory Wasson is a *MacUser* contributing editor and the author of the *MacUser Guide to Shareware*, published by Ziff-Davis Press. He whistled while he worked on this feature.



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Minneapolis, MN 55426  
Phone: (612) 927-6303  
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Apple, PowerBook, Stylewriter, Canon, Mannesmann Tally, Kodak and GCC are registered trademarks of their respective firms.

### In Your Vehicle...Car, Van, Boat, or Whatever

#### Automotive Power Adapters

- **PB-2**...Higher current output to accommodate all PowerBooks, 100 thru 180, including color and those with power consuming options.
- **PB-3**...For all Duo 200 Series computers. Recharge the internal battery and operate your Duo while you drive.
- **Automobile Power Adapters**...Also available for Stylewriter, Canon, Mannesmann Tally, Kodak, GCC and other printers.

### In Your Home, Office, Hotel or Motel.

#### Chargers & Conditioners

- **SuperCharger**...The SBC-1 is a FAST, portable charger/conditioner. Full Charge in two hours or less with no need to trickle charge. New, extruded aluminum housing.
- **Model BC-4070**...The Original desktop charger/conditioner for all PowerBook NiCd batteries.
- **Model BC2-100**...The Twin Traveler, operates from the Apple AC adapter for overnight charging of three batteries (one internal), or charges two batteries and operates your PowerBook at the same time.

### In The Air...Away From Power Sources

#### Auxiliary Power Packs

- **APP-2**...Rechargeable power pack with 4 times the capacity of the internal battery. Can be recharged using 12VDC, 110VAC or the Apple AC Adapter for world wide use.
- **APP-3**...Emergency power pack uses readily available alkaline "D" cells to provide four times the capacity of the internal PowerBook battery.
- **Custom**...12 Volt power packs and custom units are available for special applications. If you have a specific requirement, contact LED for a prototype to fit your needs.



**Making Your Portable  
MORE Portable**

Made in USA

CIRCLE 26 ON READER SERVICE CARD.



# Writers' BLOCKBUSTERS

Can software help you crank out  
that megahit screenplay or novel?  
These programs claim they can.

**T**he most terrifying aspect of fiction writing is facing a blank page — or a blank word-processing document. It's no wonder that writers are always looking for shortcuts to creative inspiration and marketable output. Illicit drugs or alcohol and ritual sacrifices to the muse are traditionally popular methods, but they have their drawbacks. An alternative method that's gaining in popularity, judging by the proliferation of ads in *Writer's Digest*, is software — software that promises to do everything from providing plots to imparting the crucial secrets of successful fiction.

To see if we could separate the hope from the hype, we ordered copies of four prominent programs — Plots Unlimited, Collaborator II, StoryLine, and WritePro — and went to work creating a masterpiece. We used each program until one of two things happened: We developed a story worth writing, or we gave up in disgust.

BY BOB LEVITUS







## Creative-Writing Tools

**We** couldn't develop a single 'professionally structured story.' In fact, we never came up with a story worth telling at all.



Be forewarned: All four programs are from small-scale developers, so their interfaces lack polish. Three of the four are copy-protected as well (that is, they require a nonshareable piece of software or hardware in order to run), so they start out with a strike against them. And don't forget, these are only tools to get you *started* — they can't write your story for you. On the other hand, if you think you've got a good story in you, most of these programs can help you turn out a better one.

### Plots Unlimited: Database-Driven Disappointment

We decided to start with Plots Unlimited, because it sounded the most promising, its ads brimming with enthusiastic endorsements from screenwriters, novelists, and reviewers:

"nothing short of a miracle," "much of what is good in it [my novel] is certainly by grace of Plots Unlimited," "easy to use," "one of the best programs of the year."

Our favorite was, "With Plots Unlimited you'll develop your own original material — quickly building professionally structured stories that *always* integrate characters, plots, and subplots."

After using Plots Unlimited for a few hours, we had to wonder if the authors of these quotes had used the same software we were using. We couldn't develop a single "professionally structured story." As a

matter of fact, we never came up with a story worth telling at all.

The program is basically an interface to a database of thousands of plot twists, or *conflicts*, that you string together to form a plot outline. Unfortunately, finding good conflicts with Plots Unlimited (much less a series of conflicts that make sense together) is nearly impossible.

Here's how it's supposed to work: You begin by choosing a *plot method*, which can be a character combination (such as "Jack, Carol, and male law officer" — Jack and Carol being generic male and female protagonists whose names you can change), a story type or subtype (such as Romance, Misfortune, or Crime/Immorality), or some combination of these specifiers. If you prefer to begin with more-meaningful story elements, an alternative plotting method called MasterPlot lets you start with the theme of the story, as assembled from a menu of 15 protagonists, 62 action statements, and 52 resolutions. Once you've provided the starting point, Plots Unlimited searches for appropriate conflicts in its database and lets you choose one. Then you're off, expanding the conflict by branching forward or backward into related conflicts that Plots Unlimited presents (see Figure 1).

Unfortunately, every plotting method we chose led either to a ridiculously long list of conflicts (ever tried browsing through more than 600 plot twists presented in small Geneva type?) or to a disappointingly small set. And expanding the initial conflict forward or backward inevitably led us to a dead end all too quickly, with only two or three equally unworkable conflicts to choose from — often conflicts that really weren't applicable to the type of story we had in mind.

If you play with the program long enough, you're sure to find one or two conflicts that sound good to you. But that's not the point. You can probably find one or two conflicts that sound good to you in the morning newspaper.

Even if Plots Unlimited did help you build the professionally structured story its ads tout (but trust us, it doesn't), you wouldn't enjoy using it. The windows aren't movable or resizable, and the small text appears in small fields. Then there were the bugs. The program crashed unless we set our color

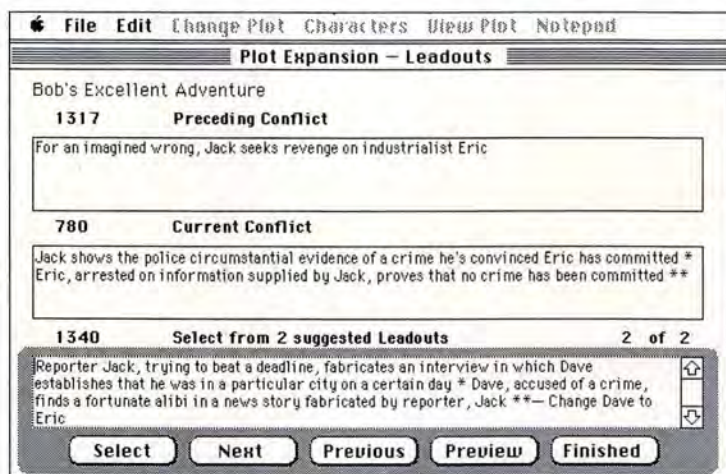


Figure 1: Plots Unlimited gives you access to a huge database of plot conflicts you can combine into a story outline — if you manage to find conflicts you like and if they don't lead your plot to a dead end (which happens all too easily).



monitor to two colors (black and white). A more serious bug corrupted one of our plots, rendering it completely unrecoverable (tech support promised a fix "within the week," but at press time, months later, we still hadn't heard from anyone). Finally, Plots Unlimited has software-and-hardware copy protection. It requires both a system extension and a *dongle* — a little plastic box and cable that must be plugged in to an ADB (keyboard and mouse) port.

Because of its disappointing performance, high price (\$399), bad interface, bugs, copy protection, and no-return policy (all the other programs offer a 30-day money-back guarantee), we really can't recommend Plots Unlimited.

### Collaborator II: Partner in a Box

The box proclaims, "The screenwriting partner that won't let you down. Now you'll never work alone." Believe it or not, Collaborator II pretty much lives up to that promise.

Collaborator II is an interactive questionnaire that steps you through a series of 70 questions designed to help you write a successful, salable screenplay. The questions are based on Aristotle's six elements of drama: plot, character, thought, diction, music, and spectacle. Questions range from "Who is the audience?" to "What is at stake?" to "What fault or flaw in the protagonist is an obstacle to obtaining the goal?"

The format is simple. The program asks a question, and you type in an answer. The easiest way to use Collaborator II is to go through the 70 questions in the order the program asks them. If you have a flash of brilliance that relates to a question you're not working on, the other 69 questions are never more than a mouse click away.

A VHS videotape of Frank Capra's classic *It's a Wonderful Life* comes with the software. You must watch the movie (or be familiar with its story) before you begin using Collaborator II, because the documentation and on-line help refer to it frequently.

In addition to posing helpful questions, Collaborator II offers an in-depth Character Profile template that you fill out for your major characters (see Figure 2). It also has a decent spelling checker and thesaurus plus a notepad. Everything you type in Collaborator II — the character profiles as well

Character Profile - Bobby Terrence	
-----Physiological-----	
Name:	Bobby Terrence
Sex:	m
Height:	6'1"
Weight:	180
Age:	24-32
Hair:	Brown
Eyes:	Green
Voice:	Commanding and
Race:	White
Complexion:	Olive
Nationality:	US - Texas now;
Speech:	Powerful, loud. Trace of
Health:	Very good
Addictions:	Caffeine
Handicaps or Impairments:	Bad knee. Kept him from playing
Marks or Scars:	None
Manner of Dress:	Levi & cowboy boot perfect.
-----Sociological-----	

Figure 2: Collaborator II's Character Profile template helps you create three-dimensional characters. The program's extensive questionnaire asks the right questions to help you write a well-structured screenplay.

as the questionnaire answers — is easily exportable to a text file, in which you can polish it further.

So what's wrong with Collaborator II? Its user interface, although friendlier and more Mac-like than Plots Unlimited's, is still far from perfect. On the good side, you can resize most windows and the program remembers their size and placement when you quit. But unfortunately, some windows — Help, Character Profile, Character Notes, and Sample Dialog, for example — are totally modal, which means that when one of them is open, you can't use other windows or the thesaurus or spelling checker. And although Collaborator II's software copy protection is less hateful than Plots Unlimited's (and StoryLine's) draconian hardware/software scheme, it's still annoying.

Truth be told, you could buy a good word-processing program and a copy of Viki King's excellent *How to Write a Movie in 21 Days* (New York: Harper and Row, 1988; \$10) or Syd Field's classic *Screenplay* (New York: Dell Trade Paperback, 1984; \$7.95) for a lot less than Collaborator II's \$329 list price. You could probably take a semester of screenwriting classes for less. But Collaborator II is more convenient, and it's good at what it does. Even writers who have taken screenwriting classes and read King and Field may find Collaborator II a useful tool.

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that promise.





## Creative-Writing Tools

**By** the time you've finished, you should know everything you need to complete a scene-by-scene outline or screenplay.



### StoryLine: A 22-Step Program

John Truby, the creator and publisher of StoryLine, is one of the nation's top writing instructors. His popular Writers Studio in Los Angeles is a training center for professional writers, producers, and directors and boasts more than 5,000 graduates. The guy knows his stuff.

StoryLine, a HyperCard-based program, escorts you through a series of exercises based on Truby's story-structure class, looking at your story from various angles: premise, conflict(s), characters, visual tracks, action tracks, revelation, morality, and so on. The lessons are linked, so what you type in one lesson appears automatically in other lessons when appropriate.

The core of the program is a lesson called 22 Steps, a series of exercises that help you mold your story into a dramatic flow that builds to a satisfying conclusion. This is where you work out your story's structure and then examine the sequence of revelations (when your protagonist learns things) and the sequence of moral jeopardy (whether the protagonist will do the right thing). By the time you've finished, you should know everything you need to complete a scene-by-scene outline or screenplay.

The context-sensitive on-line help is good; it gives Truby's insights on each question. Better than the on-line help are the StoryLine

breakdowns of four popular movies — *Star Wars*, *The Godfather*, *Vertigo*, and *The Verdict*: Truby's analysis of each movie enables you to compare your work with these popular films (see Figure 3).

StoryLine's most fatal flaw is HyperCard. Even on our IIfx with HyperCard's memory setting bumped to 3,000K, StoryLine was slow — noticeably slower than the other programs. Switching from module to module took several seconds, and even switching windows caused a discernible delay. Be prepared to take some coffee breaks, even if you have a powerful Mac.

Even without considering HyperCard's inherent slowness, moving from lesson to lesson in StoryLine is too much trouble. StoryLine's palette-based navigation method is much less convenient than the method used in Collaborator II, which lets you move instantly to any lesson by choosing it from the Question menu.

Finally, StoryLine, like Plots Unlimited, uses the odious dongle hardware/software copy-protection scheme. However, Truby says that version 2.0, which wasn't available at press time, will have software-only copy protection.

### WritePro: A Pro's Advice

Sol Stein's WritePro is a gem. Stein has taught creative writing from coast to coast and has edited or published successful writers, the likes of James Baldwin, Jack Higgins, and Elia Kazan. WritePro is based on Stein's creative-writing curriculum.

The program is a series of interactive lessons (see Figure 4), liberally laced with Stein's rules — more than 100 in all. The rules provide good advice, such as "Somebody has to want something badly" or "What characters say and do under stress is revealing, sometimes inadvertently revealing."

All of the program's lessons are easy to understand, and each lesson takes between a few hours and a few days to complete. The structure of WritePro is simple: Learn, write, learn some more, rewrite. It's a lot like taking a creative-writing class — the instructor teaches you something and then asks you to apply in your writing what you just learned. Then you examine what you wrote and try to improve it. If you're suffering from writer's block, WritePro helps you get going by proposing characters,

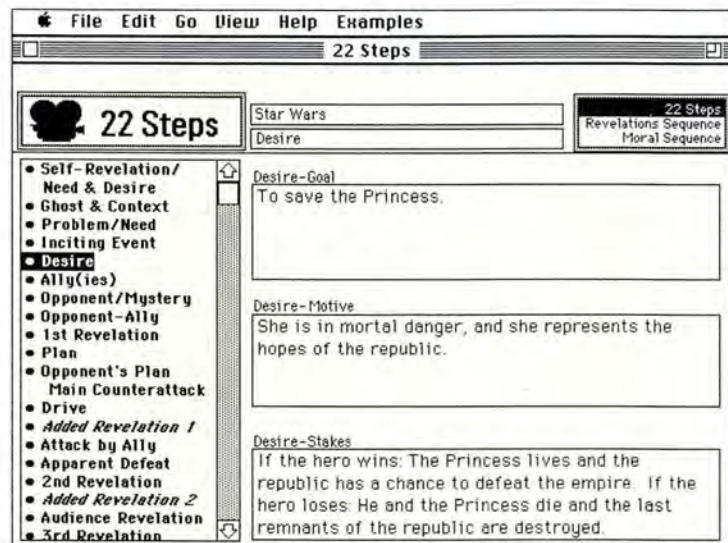


Figure 3: StoryLine's 22 Steps lesson gives you in-depth analyses of popular movies such as *Star Wars* along with exercises to help you develop your own successful dramatic story structure.



## How Butterflies Transform

The butterfly passes through several stages in its glorious transformation from egg to the completed creature that we all visualize as the butterfly. The adult female lays between one hundred and several thousand eggs throughout her lifetime each with the potential of becoming an adult butterfly itself.

Each egg, so tiny that it can only be seen by the human eye with the help of a microscope, is laid on or near a plant on which the newly hatched grub will be able to feed. These eggs are often green or yellow, but can also be found in shades of blue or red, each with a shell-like design covering it.

Usually in the spring or summer a tiny caterpillar, or grub, will hatch from the egg. This wormlike creature almost immediately begins to feed as it will consume the majority if not all of its nutrients during this phase of its life.

The caterpillar will continue to eat until it has eaten so much that its skin can no longer contain the newly acquired mass. The skin then bursts and the caterpillar will shed it in order to have it replaced by a newer and larger one. This process continues for weeks as the caterpillar increases in size, several times its original mass.

Often during the time of fall, the caterpillar will then either spin a silken pad from which it suspends itself by its hind legs or it will fasten its body upright by silken threads to a twig creating a chrysalis or exposed pupa. Usually after spending the winter months dormant, the final stage of transformation will take place.

The shell of the chrysalis is broken open and the creature that emerges is barely recognizable as the butterfly that it will become. Its wings are crumpled and kept close to its moist limp body. It will remain clinging to the cocoon or a nearby branch as its form gradually begins to become dry and firm.

It moves its wings slowly at first with little strength but as they dry it is soon ready to take flight. The creature that ascends into the air has been through its final stage of development and is now the completed butterfly. This butterfly is now called the imago, or perfect insect.

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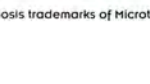
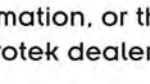
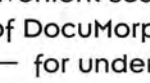
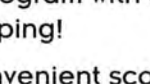
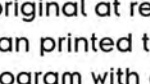
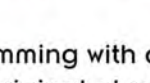
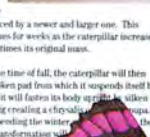


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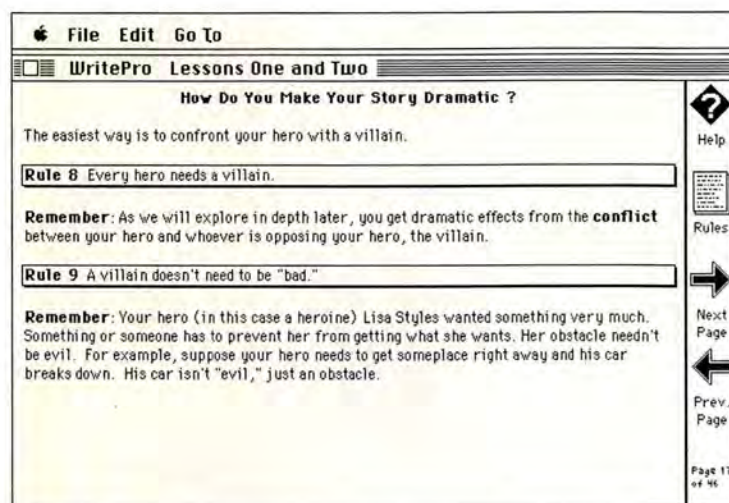
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## Creative-Writing Tools



**Figure 4: WritePro is a series of interactive lessons with a no-frills interface, a comparatively low price, and lots of useful rules for writing good fiction — or rewriting until it gets good.**

### Sol

Stein's rules provide good advice about what should happen in your story, such as 'Somebody has to want something badly.'



situations, or locations for you to consider.

WritePro is unique in the emphasis it places on rewriting. The program teaches that "writing is rewriting" and goes out of its way to get you into the habit. You end up rewriting almost all of your initial compositions, often three or four times.

As for the interface, it's no-frills but it gets the job done. You do all of your work in a single window that you can move but not resize. The fields in which you write are almost always too small, but at least they have scroll bars. The manual is meager but probably unnecessary, given that the program is extremely easy to use. Just launch WritePro, read what's on-screen, write what the program asks you to write, and then click on the Next Page button. Resizable windows and the ability to jump directly from page 1 to page 44 without clicking on the Next Page button 43 times would be welcome additions, however.

WritePro comes in two versions — WritePro 1/2/3/4 (\$99) and WritePro SixPack (\$149). 1/2/3/4 includes the first four lessons, on characterization, beginnings, point of view, scenes, dialogue, and more. SixPack adds lessons 5 and 6, which teach you to cut flab, increase tension, step up pace, edit yourself, and more.

With its low price and lack of copy protection, WritePro is a good value for almost any fiction writer. Although it's a fine choice for writers of all skill levels, WritePro is particularly appropriate for less experienced writers.

**Table 1: Pros and Cons of Creative-Writing Tools**

	Collaborator II 2.01 \$\$\$	Plots Unlimited 1.04 \$½	StoryLine 1.4 \$\$\$	WritePro 2.1 \$\$\$½
List price	\$329	\$399	\$345	WritePro 1/2/3/4 (4 lessons), \$99; WritePro SixPack (6 lessons), \$149
Pros	Structured questions and good on-line help let you focus on creating a compelling story. Speedy navigation. 30-day money-back guarantee.	Database contains some interesting plot ideas if you can find them.	Good depth. Great examples. 30-day money-back guarantee.	Solid creative-writing tutorial. No copy protection. Inexpensive. 30-day money-back guarantee.
Cons	Restrictive interface. Software copy protection.	High price. Inflexible interface. Bugs. Hardware/software copy protection. No returns or refunds.	Slow (HyperCard). Navigation awkward. Hardware/software copy protection.	Fixed window size. Navigation awkward. Exercises may not work with your story.
Company	Collaborator Systems P.O. Box 57557 Sherman Oaks, CA 91403 818-980-2943	Ashleywide Publishers 23715 W. Malibu Rd. Ste. 132 Malibu, CA 90265 310-456-1277	Truby's Writers Studio 1739 Midvale Ave. Los Angeles, CA 90024 310-575-3050	The WritePro Corp. 43 Linden Cir. Scarborough, NY 10510 914-762-1255



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## Creative-Writing Tools

**Bear** in mind, though, that the hardest part of writing is staying in the chair.



### The Envelope, Please


Can any of these programs really put you on the path to bestsellerdom or Oscarland?

Obviously, Plots Unlimited isn't even a contender. Its awkward interface, unimaginative plot suggestions, and bugs are good reasons to avoid it. Although it may help you come up with a plot twist or two, it's not worth its \$399 price (the highest of the group).

Of the remaining three programs, we'd be hard-pressed to pick a winner. Each is good at what it does, although each has a different approach.

If you want to work through the planning issues for your screenplay (or novel, because

many of the same principles apply) in the shortest possible time, check out Collaborator II. If you want to delve deep into every aspect of your story, turn to StoryLine. If you'd like an excellent, self-paced writing tutorial, you can't go wrong with the inexpensive WritePro.

Bear in mind, though, that none of these programs can give you what it takes to carry your story through to completion. As fiction veteran Wallace Stegner reportedly once said, the hardest part of writing is staying in the chair. 

**Bob LeVitus** is the author of *Dr. Macintosh's Guide to the On-Line Universe* and lots of unfinished novels and screenplays.

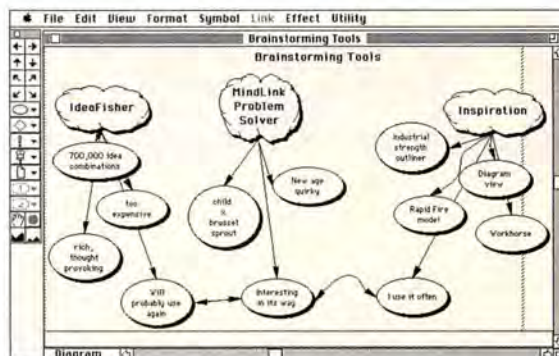
### Provoking a Brainstorm

When your creativity is as blocked as . . . as . . . well, when it's really *stuck*, you may need more than a writing tool. Perhaps it's time to pull out the brainstorming tools.

IdeaFisher is a huge (nine disks!) free-form database of questions, ideas, concepts, and associations designed to unstuck you when you're stuck for words or ideas. Its free-association structure combined with its thought-provoking questions, key concepts, and 700,000 idea combinations make it a terrific brainstorming aid. However, it does take up a lot of room and its interface is clunky at best.

MindLink Problem Solver is another brainstorming tool, a HyperCard stack that purports to solve problems with a unique blend of New Age and pop philosophy. It may be the only software of its type that comes with toys — a plastic martini olive and a bell, to name two — to help trigger new ideas. The program is based on "guided problem solving," which means it includes such exercises as "Think about what happens when you cross a child with a brussels sprout" and a manual with such section titles as "Follow Your Bliss." The exercises are fun and rarely boring, but we couldn't help feeling that most of the material would work just as well in a \$10 paperback book. In other words, although the subject matter was often inspiring, the software itself did little to make it more so. It might work for you, but we're not sure it's worth the \$299 asking price.

Our brainstorming tool of choice is Inspiration, a whizbang outliner and free-form-diagram generator that's finally fulfilled its promise in version 4.0. Getting Inspiration is like getting two programs in one. Start out in the diagram mode, and use Rapid Fire to blast ideas out one after another by pressing the Enter key after you type each one. The ideas quickly appear on-screen, each contained in its own symbol. Now move, connect,



**Inspiration makes it easy to blast out ideas and organize them in either diagram or outline form.**

disconnect, and reconnect them; change their shape, size, and color; or add text annotations of any length. Finally, switch to the outline mode to polish and further organize your thoughts. Everything you type in the outline appears automatically in the diagram and vice versa.

The diagram mode is full-featured, offering dozens of different types of symbols as well as complete user control over the appearance of symbols and connecting arrows. A helpful feature lets you show or hide subtopics with a double-click, just as you do with an outline processor.

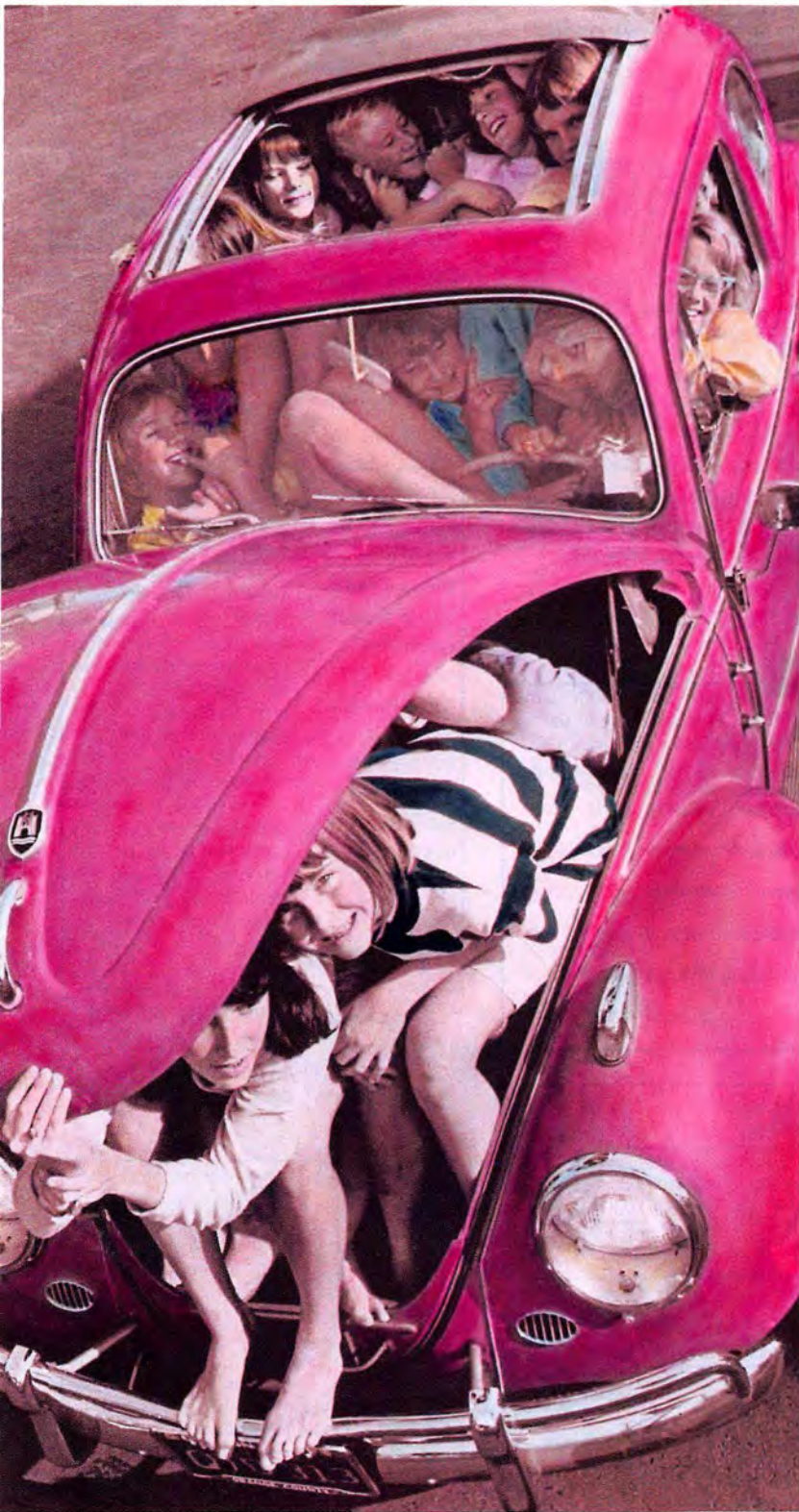
As for the outline processor itself, it's easily in the same league as MORE, the long-standing outline champion from Symantec. It has thoughtful touches such as discontinuous selection (you can select multiple topics even if they aren't contiguous), style sheets, extensive keyboard shortcuts for both navigation and text entry, and exportability to most of the popular word-processing formats.

Tutorials, templates, an idea book, and samples encourage you to explore the program. Inspiration is easy to master, and you'll find it handy whenever you seek its namesake.

	IdeaFisher 2.0	Inspiration 4.0	MindLink Problem Solver 2.2
	🔗🔗🔗	🔗🔗🔗🔗	🔗🔗🔗
List price	\$199	\$295	\$299
Company	Fisher Idea Systems, Inc. 2222 Martin St., Ste. 110 Irvine, CA 92715 714-474-8111	Inspiration Software P.O. Box 1629 Portland, OR 97202 503-245-9011	MindLink, Inc. Box 247 Kings Hwy. North Pomfret, VT 05053 802-457-2025



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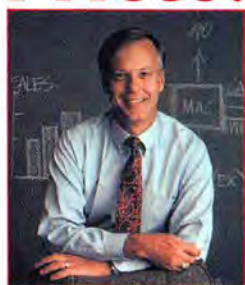
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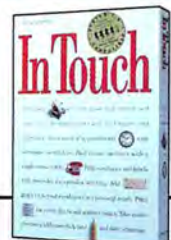
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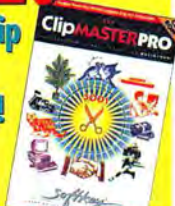
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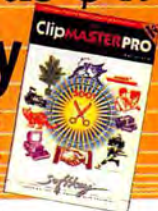
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image quality.*

**BY SHELLY BRISBIN  
AND JEFF PITTELKAU**

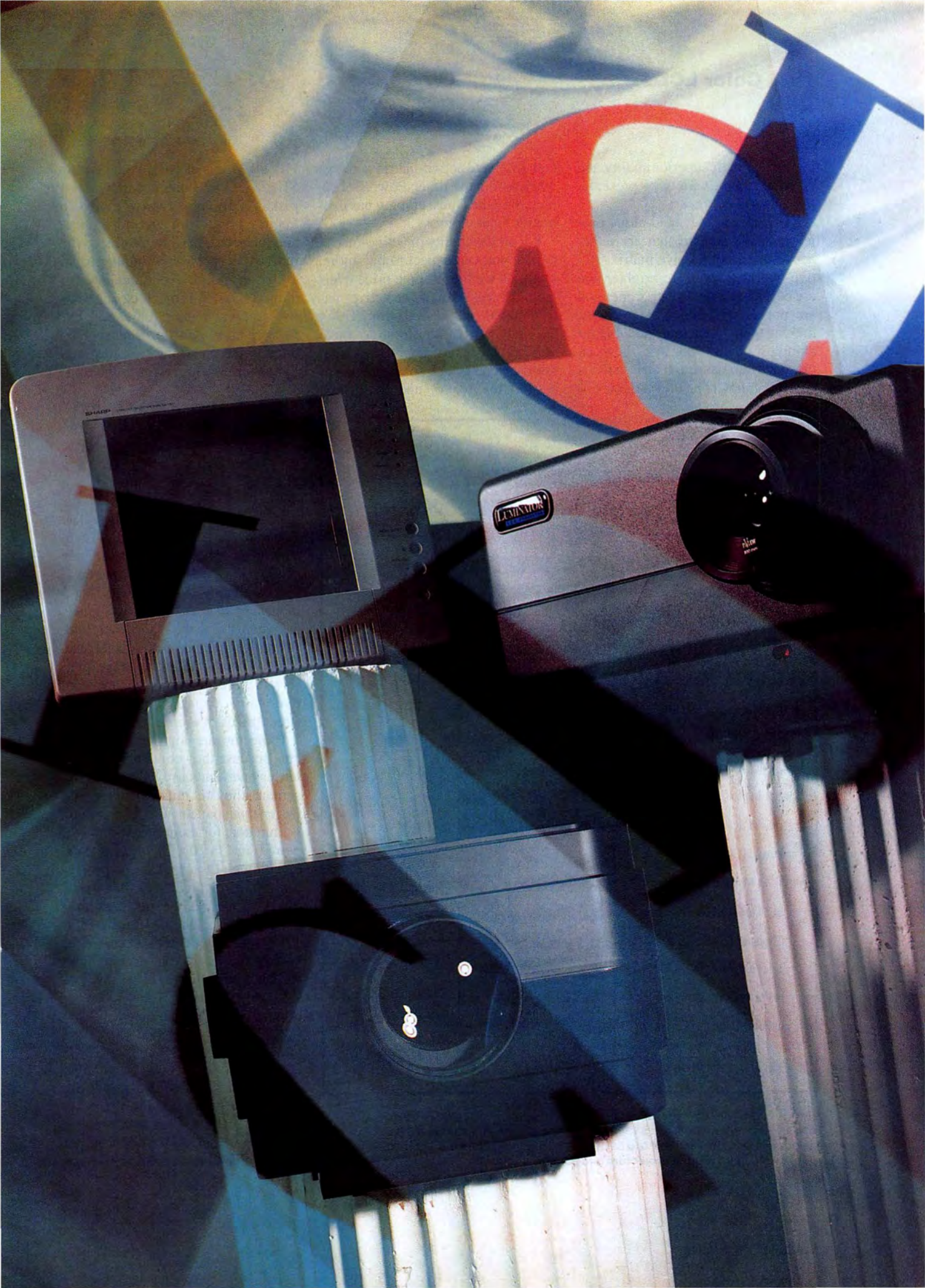
**T**he promise of LCD (liquid-crystal display) technology came into focus for Mac users with the introduction of the PowerBook. A light, flat, sturdy LCD panel or an LCD projector is a great improvement over a heavy, bulky desktop monitor. Like the PowerBook, an LCD panel or projector offers portability for those who want to project images from a Mac for viewing by small groups.

But be warned, LCD projection systems are expensive and they don't deliver the crisp, colorful images Mac users are accustomed to. For those who are willing to sacrifice perfection and a few thousand dollars, however, LCD presentation systems are a portable, efficient way to show off their work.

Once connected to a Mac, a PC, or another video source, an LCD panel or projector outputs video to its screen. In the case of a *projection panel*, images can be projected onto a wall-mounted screen once the panel has been placed on the lighted surface of an overhead projector (OHP). An *LCD projector* is a self-contained unit and needs no separate overhead projector (see the "How It Works" sidebar).

MacUser Labs tested 16 color LCD projection panels and 4 stand-alone projectors. We also examined three self-contained LCD units (see the "Standing Alone" sidebar). Although black-and-white as well as simulated-color LCDs are available, we focused on color units,







because of their superior quality and usefulness in a variety of presentation situations.

LCD panels and stand-alone projectors have screens that are either active matrix or passive matrix. Active-matrix screens are brighter and crisper than passive-matrix ones and are not as subject to image flaws, making them much more suitable for complex images, because they can present detail passive-matrix screens simply cannot. (The PowerBook 170

and 180 have active-matrix screens, whereas all the other PowerBooks, including the Duos, employ passive-matrix technology.)

For all the quality of active-matrix LCDs, you can expect to pay more, although we found some price overlap. The least expensive active-matrix panel we tested, the Telex Magnabyte 1000, has a street price of \$3,525. Most of the other active-matrix panels had street prices of \$4,500 to \$6,500, and the Dolch

P.R.I.S.M. panel costs a staggering \$10,581. On the other hand, you can pick up a 16-color passive-matrix In Focus 1600LC for around \$1,860, and the Proxima ColorWorks — the most expensive passive-matrix panel — is available from dealers for around \$3,575. Projectors, active as well as passive matrix, are more expensive than panels, because they include the electronics, optics, and light source required for projection.

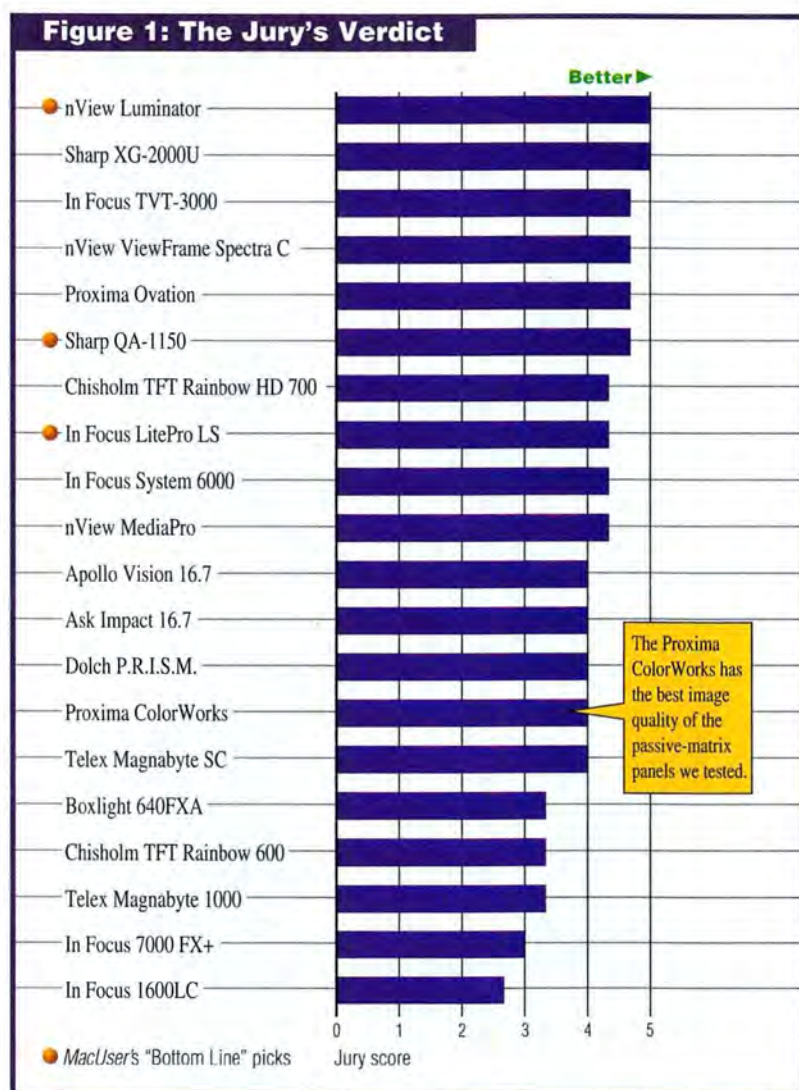
### Bigger Than a Bread Box?

LCD panels weigh from 4.4 pounds to around 9 pounds and slide easily into carry-on luggage or a briefcase. The panels we tested had one of three screen sizes, all but three measuring 8.25 x 6.25 inches. The screen of the nView MediaPro measures 8.31 x 6.24 inches, and those of the nView ViewFrame Spectra C and the Sharp QA-1150 are 6.75 x 5 inches. Each of the latter two panels are smaller than the others we tested, fitting more easily into a briefcase. They also exhibited good image quality and were among the cheapest active-matrix panels we found, with street prices of around \$4,000.

Projectors are not briefcase travelers. Because they contain projection lenses and lights as well as an LCD screen, they're much heavier and larger than panels are. The nView Luminator, for example, weighs 40 pounds and is 20 x 18.5 x 11 inches.

Although LCD panels and projectors can be invaluable to Mac users, one of their chief benefits is the ability to project images from PCs, VCRs, and other video sources. Most panels and projectors accept input from S-video and NTSC sources as well as VGA, CGA, and EGA — popular PC video standards.

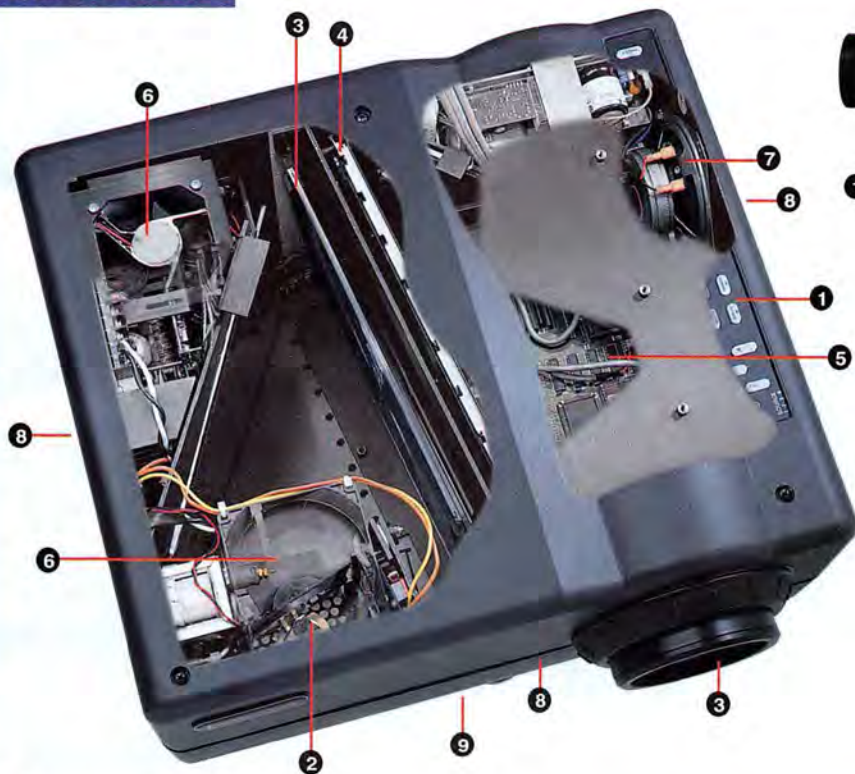
All the units we tested except the Dolch P.R.I.S.M., the Sharp XG-2000U, and the Telex Magnabyte 1000 ship with Mac-compatible cables. We had to request a cable from Dolch and Telex, and because a cable for the XG-2000U was not readily available, our lab staff made



**Figure 1:** Our jury compared the image produced by each LCD with an image displayed simultaneously on a 13-inch AppleColor High-Resolution RGB Monitor, rating the LCDs on a scale of 0 to 5. The nView Luminator and the Sharp XG-2000U won out over all the other projectors and panels we tested.



## How It Works



The nView Luminator, our favorite LCD projector, incorporates most of the important features to be found in a color LCD panel or projection system. The Luminator and other projectors contain an LCD plus the electronics, optics, and light source required to project an image.

### 1 Inputs and Controls

Multiple inputs allow connection to a variety of video and computer sources. Illuminated buttons on the top of the projector let you operate controls easily in the dark.

### 2 Light Source

A 400-watt metal-halide bulb provides a bright source of light. The brightness of an LCD's projected image depends on the type and wattage of the lamp in the overhead projector.

### 3 Optics

The Luminator uses a high-quality optical assembly consisting of front-surface mirrors and lenses. With a projection panel, the quality of the projection depends on the overhead projector.

### 4 LCD

The 640-x-480-pixel display lets you

show the entire Mac screen without subsampling (creating a complete screen image by processing the video signal in parts), which can lead to a fuzzy or distorted image. An active-matrix LCD is bright and has a wide range of colors but is more expensive than a passive-matrix one.

### 5 LCD Controller

The controller converts the incoming computer or video images into signals the LCD can understand. Although the display can show a wide range of colors, the range is finite. If the display cannot directly show a given color, the controller will attempt to simulate it, using dithering techniques. In general, displays that support more colors use more electronics, which adds to their cost.

### 6 Fans

The heat produced by a bright metal-

halide lamp makes adequate ventilation extremely important. Even though the Luminator has a main cooling unit, the bulb requires its own fan. The Luminator's heavy-duty cooling system generates noticeable background noise that can disrupt presentations.

### 7 Speaker

Stereo audio sources are mixed and output through a built-in 7-watt speaker.

### 8 Infrared Sensors

Sensors located on three sides of the projector housing allow greater mobility when the Luminator is being controlled via the hand-held remote.

### 9 Air Filter

An air filter located on the bottom of the unit keeps dust out of the optics and the LCD assembly.

— Jeffy Milstead

one. The XG-2000U also required a scan converter (an extra piece of equipment to keep track of) for viewing Mac video. A scan converter adjusts the video signal's frequency so that the video source (the Mac, in this case) and the LCD are compatible. The In Focus System 6000 projector required a scan converter too, but this was included in the package, whereas the Sharp projector required

a third-party unit (Sharp recommends the Genie Scan converter, available for approximately \$1,600).

Many of the products included a Y-cable for connecting a Mac simultaneously to the LCD projector or panel and an optional external monitor. The nView Luminator projector uses two cables: one leading from the Mac to the projector and the other from the Mac to an external monitor.

Although most panels support a monitor connection, the Proxima ColorWorks and Ovation *require* that you either connect a monitor or use a terminating resistor, which is not included with the units.

## Color Tricks

Just as with standard Macintosh monitors and video cards, the more colors an LCD panel or projector



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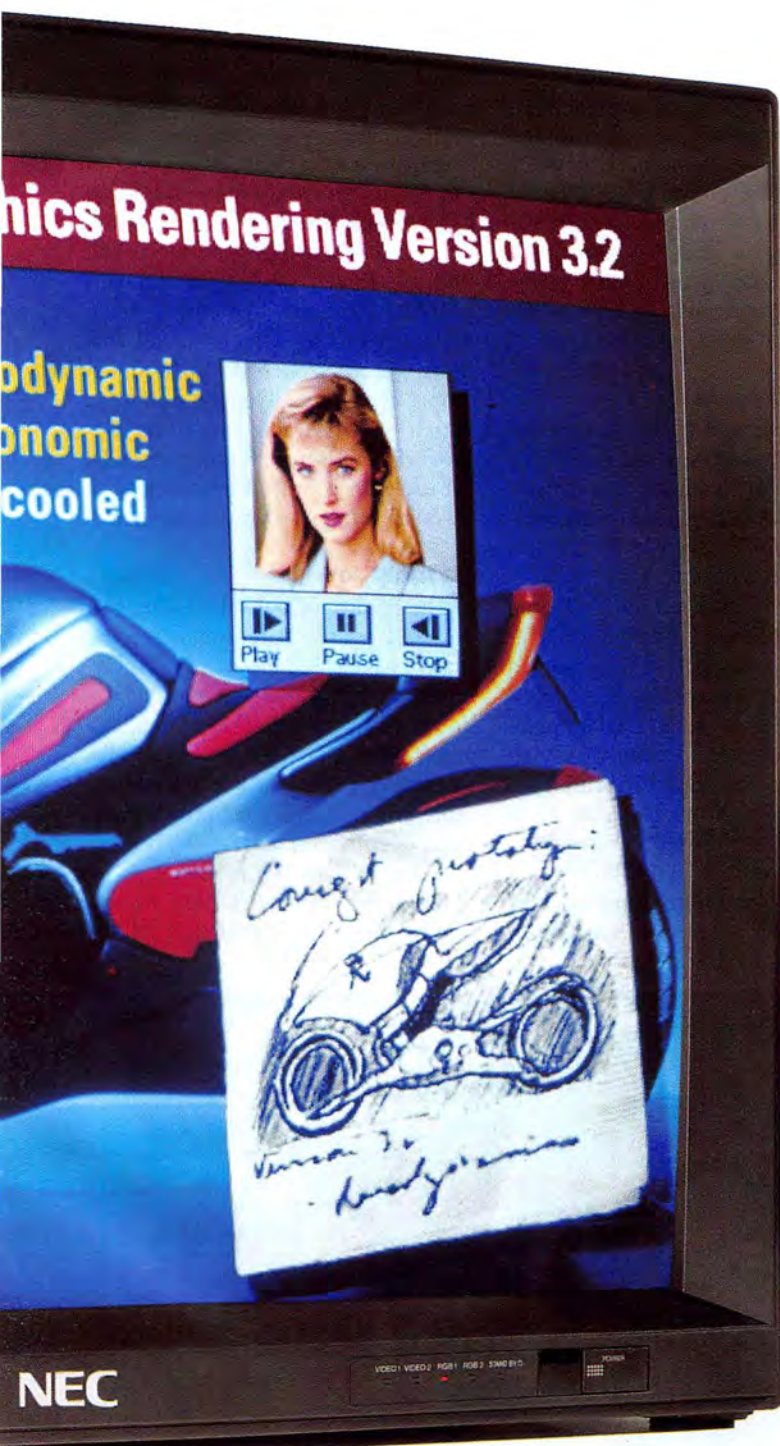
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## On the Horizon

The race to create more-portable LCD projection products is on. In Focus' newest entry is the PanelBook (\$5,995), a notebook-sized projection panel announced shortly after we'd completed our testing for this report. The PanelBook has a 9.4-inch-diagonal active screen area and measures 11.5 x 9.5 x 2 inches. In Focus intends the panel for displaying full-motion video. Like most of the panels we tested, the PanelBook supports NTSC and PAL and also works with VGA video.

Another product just reaching the market as we went to press was the Sharp QA-1650 projection panel, a more colorful cousin of the QA-1150 tested for this report. The new panel, priced at \$6,495, boasts a 10.4-inch-diagonal active screen area and 16 million colors. The QA-1650 comes with Mac II and monitor cables. The new panel also supports the Mac LC and the PowerBook.

Sharp also recently announced a new LCD projector, the XG-E800U. According to the company, the new system can be converted for rear projection at the touch of a button, contains a 3-watt amplifier and speaker, and automatically adjusts its brightness level according to the video input. Unlike the XG-2000U we tested, the new product does not require you to purchase an external scan converter. The XG-E800U retails for \$9,995.

— Shelly Brisbin

can display, the better. The models we tested could display from 16 colors (the In Focus 1600LC) to more than 16 million (the Apollo Vision 16.7, Ask Impact 16.7, In Focus System 6000, and Sharp XG-2000U). Unlike with a standard monitor, however, counting an LCD's colors is not a sure way to pick a winner. In general, more colors mean a better view, but LCD images are greatly affected by the panel or projector's brightness and by the quality of the LCD and the amount of light in the presentation room.

## Control Issues

In an ideal world, LCD panels and projectors would be as plug-and-play as a Mac color monitor. But as anyone who has ever placed transparencies on an OHP surely knows, this is not an ideal world.

MacUser Labs set up each unit according to the documentation's instructions. Generally, this involved plugging in the appropriate cables, placing the panel on an OHP or placing the projector in front of a wall screen, and adjusting for brightness and video synchronization. Most of the units have digital controls and come with remote-control units.

We discovered the importance of video synchronization, or sync, when

we tried to plug these units in to an LC and a PowerBook 160. Although the LC and the PowerBook use the same 640-x-480-pixel resolution found in Mac II-series machines, because there are subtle timing differences between these Mac systems, vertical bars sometimes appeared on-screen when we connected some of the panels and projectors. With the LC, pressing the Sync button several times usually cured this problem, but with the PowerBook, a far stranger problem occurred — a purple tinge appeared on the screens of all the units we connected. At press time, Apple had not resolved the problem, which we believe is caused by the PowerBook. Before buying an LCD for use with your PowerBook, test it by connecting it to your computer.

## Liquid Images

The quality of color LCD images varies, for several reasons. Active-matrix panels and projectors display colors better than passive-matrix ones do. Passive-matrix systems tend to suffer from ghosting, dither (a technique used to fool the eye into seeing more colors than are actually there), and poor image contrast. They also take longer to draw the screen.

In testing brightness and image quality, we also found that LCDs

## Standing Alone

Presenters who have small audiences and whose interest in portability outweighs the need for either projection capabilities or high-quality graphics can take advantage of LCD technology with one of three stand-alone active-matrix color LCD systems: the Ask Flat Screen Mac, the Dolch P.R.I.S.M., and the Envisio ColorFrame. Like the active-matrix PowerBooks, these flat, portable displays take up a lot less real estate than a presentation monitor — and their image quality is noticeably superior to that of the passive-matrix color screen of the PowerBook 165c.

We applied our brightness and image-quality tests to the Ask Flat Screen Mac (\$5,995 direct) and the Envisio ColorFrame (\$5,495 list, \$4,425 street)

and retested the pricey Dolch P.R.I.S.M. (\$10,581 direct) with its included snap-on backlight. All three feature a 10.5-inch-diagonal active display area — just

slightly smaller than that of a 13-inch AppleColor High-Resolution RGB Monitor's 11.5-inch active screen area.

All three accept video signals from



**The Envisio ColorFrame, the best of the stand-alone LCD displays.**



## How We Tested LCD Panels and Projectors

To evaluate the 20 LCD panels and projectors, we first objectively measured their brightness relative to that of a 13-inch AppleColor High-Resolution RGB Monitor and then used a set of specially created test images to subjectively rate each product's image quality. Brighter images mean better contrast between shades and colors.

We connected each LCD panel or projector to a Mac IIci equipped with an Apple Macintosh Display Card 8x24 and loaded an Adobe Photoshop file consisting of a pure-white image. We then used a Minolta Color Analyzer CA-100, a hand-held luminance meter (provided by RJK-Barauk, of Palo Alto, California), to measure the brightness of the image 7 feet from the projection screen.

For our real-world test, we asked our jury to evaluate each LCD's image quality under typical presentation conditions. We pushed the color capabilities of these products to their limits, using three presentation images created with Aldus Persuasion. Each image was designed to assess a particular set of display capabilities. We showed each image, as displayed on the panels and projectors we tested, to several MacUser Labs staff members, who assigned points based on visible detail, color quality, contrast, and lack of flaws.

First was a photo-realistic image with lots of colors, including subtle flesh tones. Our jury noted any obvious flickering and any visible artifacts of dithering, a technique that attempts to fool the eye into seeing more colors than are actually there.

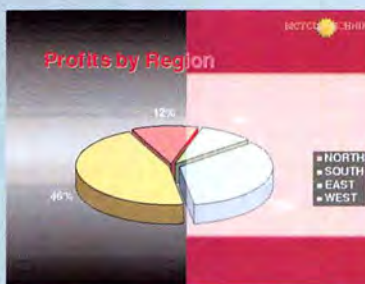
With the second image, a pie chart on a gray background, we sought color that matched that of our control display — the AppleColor monitor — and noted how accurately the LCDs reproduced the pastel colors in each of the pie's wedges.

Our final image contained red, green, and blue lines of text on a gray-ramp background. Our jury favored the units that reproduced saturated colors well and that had minimal dithering or flickering problems, which tend to be exacerbated by the smooth gray-ramp transitions.

— Jeffy Milstead



A panel that can display many colors (left) will project quality photographic images. A panel with fewer than 64 colors will show noticeable posterization and dithering (right).



Even simple business charts with shaded backgrounds will sour on panels with as few as 16 colors if you don't choose your presentation's colors carefully (right).



Active-matrix panels display deep blacks and bright colors (left). Passive-matrix panels are limited by contrast, pastel colors, and shadow artifacts (right).

either a Mac II-series machine or a Mac LC, although we found that connecting these displays to an LC required some adjustments. Each also supports the IBM-compatible VGA standard. Like all overhead-projection panels, these products require an external power supply, or brick — giving you one more item to add to your briefcase.

Although each of the three products was brighter than our reference AppleColor monitor, their display colors were deficient for one reason or another. The Envivio ColorFrame's 4,096 colors were not enough to fully display our photo-realistic test image, but the unit's image quality for our text and chart images was rock solid. Envivio includes palette-matching software, which it claims

improves color matching. The software is not compatible with System 7.1, however, so we were unable to evaluate it under our test conditions.

The Ask and Dolch products can display more colors than the Envivio ColorFrame can and looked better when displaying our photo-realistic image, but they exhibited marked shimmering in subtle details and background ramps. We were unable to completely eliminate these problems by making display adjustments.

The Flat Screen Mac has rotary controls on the bottom, which we found hard to adjust while viewing the display. The P.R.I.S.M.'s controls are digital, with default settings on power-up, and are on the front of the display, making fine-

tuning quick. The ColorFrame has analog controls with default detents hidden under a side door; adjustments are easy. All three vendors scored very well in our tech-support test.

Of the three units, the Envivio ColorFrame is the only stand-alone display we can recommend, despite its limited number of colors. Its easy-to-operate controls and not-too-exorbitant price make it a good tool for traveling presenters. When its palette-matching software is compatible with System 7.1, the ColorFrame may look even better.

In the long term, though, we feel that the best unit for traveling presenters would be an active-matrix, color PowerBook. We're waiting . . .

— Jeff Pittelkau



show varying degrees of image distortion (see the "How We Tested LCD Panels and Projectors" sidebar). Our jury found that some panels lost important color detail because they were too dim, even when used with a metal-halide OHP, which is much brighter than the 400-watt halogen OHPs commonly available in convention facilities and hotels (see the "Overhead Issues" sidebar).

As we expected, most of the passive-matrix panels and projectors scored near the bottom in our juried image-quality tests (see Figure 1). We didn't expect the passive-matrix panels to match the image quality of the active-matrix ones, although we did expect them to cost a lot less. However, the best passive-matrix panel — the Proxima ColorWorks — has a street price of \$3,575, which is a lot of money to pay for a panel that's unsuitable for projecting rich, colorful images.

Overall, the nView Luminator and the Sharp XG-2000U projectors won the hearts of our jurors. The Luminator delivered a crisp, bright image, and the XG-2000U exhibited the best color. The In Focus LitePro LS projector had the best image quality of the passive-matrix products.

Among the panels, the In Focus TVT-3000, nView ViewFrame Spectra C, Proxima Ovation, and Sharp

## Overhead Issues

Even the best LCD panel can look terrible if you use it with the wrong overhead projector (OHP). Although the old 3M unit languishing in your company's audiovisual department may be adequate for transparencies, it's probably too dim for use with today's LCD panels. Because a panel absorbs most of the light coming up through the projector's image area, a bright light source — the brighter the better — is essential for creating the best image.

The brightness of an OHP is measured in *lumens*. Although the proliferation of LCD panels has increased the demand for high-intensity OHPs, a typical audiovisual rental company may not know the lumen rating of the projectors it carries. The best choice is a high-intensity projector with a metal-halide lamp. The other variety, with a quartz-halogen light source, is more portable but doesn't work as well in presentation settings that have a lot of ambient light.

The cost of renting or purchasing a metal-halide OHP is much higher than that of a halogen projector. The Audiscan 570 metal-halide projector we used for our tests sells for around \$2,200, whereas a good halogen projector may cost only a few hundred dollars. Metal-halide OHPs are also heavier, partly because they are sturdier and require a larger cooling fan.

Don't tempt fate: Request an OHP with an integrated spare bulb or at least carry a spare and know how to replace a bulb if necessary.

Choosing the right OHP doesn't guarantee you a perfect presentation, however. Resist the temptation to project your images onto the nearest blank wall — it simply won't reflect enough light. Use a beaded or other high-gain projection screen to achieve professional results, and always try to keep as much ambient light away from the screen as you can.

— Jeffy Milstead

QA-1150 scored well. We were disappointed with the Chisholm TFT Rainbow 600 and the Telex Magnabyte 1000, two nearly identical active-matrix panels that were near the back of the pack, behind several of the passive-matrix products. Each of these panels displays only 2,197 colors, and projections of our test images, especially photographic ones, showed a great deal of dither and posterization.

## After the Sale

To evaluate how each vendor's personnel handled customer difficulties, MacUser Labs surveyed the tech support each company provides by calling with a common problem (see the "Rating Tech Support" sidebar). Most vendors were available to answer our question and did so quickly and correctly. The most disappointing exception was Sharp, whose products did well in our qualitative

## Rating Tech Support

MacUser Labs' evaluation of color LCD panels and projectors included a look at how well vendors support the products they sell. We made anonymous calls to all the vendors represented in this report, asking each to solve a typical problem. We noted how long it took us to reach the company's tech-support staff, whether (and for how long) we were put on hold, whether we had to leave a message, and how long it took the company's representative to return our call. Once we had connected with tech support, we evaluated each vendor's answers to this question:

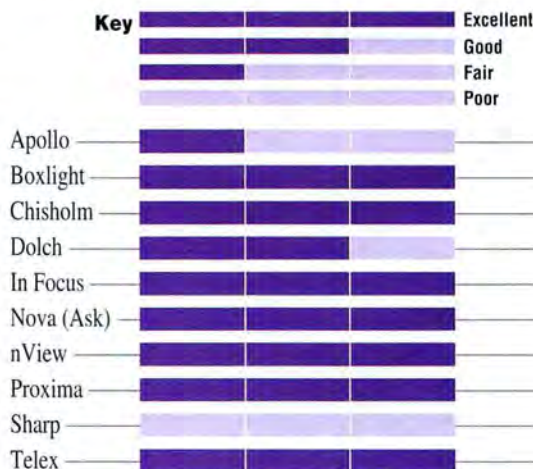
**Q.** Vertical bars appear on the LCD when it's connected to a Mac LC. What do I do?

**A.** Adjust the sync and/or phase controls on the unit until the problem is cleared up.

If a product had no problem with the LC, we asked this question:

**Q.** I plugged your product in to the external-video port of a PowerBook 160, but I can't see the output on the LCD.

**A.** Restart the PowerBook.





# How to do an honest day's work by using an alias.

The new Apple menu allows you to easily access anything on your Macintosh—files, applications, control panels, whatever—by simply placing it in your Apple Menu Items folder.

The Outline View feature lets you examine files inside a folder without having to open up a new window. Clicking on this triangle creates a drop-down list of that folder's contents.



Creating an alias is a great way to organize your projects so that files and applications can be in several places at once. Click on the "Company Overview" alias here, for example, and you actually open the original file containing your proposal to Grimshaw.

## Finding information fast with System 7.

System 7™ software comes with an array of new tools that makes accessing information on your Macintosh® easier and quicker than ever.

To begin with, you can create an "alias." Designed to help you better organize your hard disk, aliases are not full-fledged copies of files but, rather, small 2K "pointers" to files, folders and applications, which you can put in as many places on your Mac® as needed. When you click on an alias, you actually open the original—no

matter where it's located.

The new Find feature lets you search for files, folders and applications, and then actually brings them right to the front of your desktop for you.

And with Outline View, simply clicking on the triangle to the left of the folder icon creates a menu list of its contents. So you never fill up your computer screen with multiple windows trying to find that buried file.

Of course, these are just a few of the ways



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## The Bottom Line

As with most purchases, deciding which color LCD panel or projector to buy involves trade-offs. In our tests, however, we found some definite standouts, whose advantages generally come down to portability, competitive pricing, and superior image quality. We chose one active-matrix panel and two projectors: a passive-matrix and an active-matrix.

Our favorite LCD product is still the **nView Luminator** (\$10,995 list, \$9,125 street), an active-matrix projector that was the 1992 Eddy Award winner for best display product and the top performer in our image-quality tests. Its extensive features and compatibility with a wide range of computers and video equipment make it ideal for multimedia presentations. You can control the Luminator from HyperCard or from MacroMind Director, and it features a 7-watt speaker for audio output.

The **In Focus LitePro LS** (\$6,995 list, \$5,540 street) projector impressed us with its brightness, which was the best among all the projectors and panels we tested. That's an impressive achievement for a passive-matrix unit. The LitePro LS is compact and loaded

with features. We can't, however, recommend the LitePro for projecting colorful photographic images, for which passive-matrix technology isn't suitable.

Your best choice for an active-matrix panel is the **Sharp QA-1150** (\$4,995 list, \$4,425 street). Although this panel tied with several others in our image-

quality tests, it stands out because of its long list of features and its competitive price. We did have difficulty getting tech support from Sharp, spending a lot of time on hold and waiting for calls to be returned, which is not acceptable if you're trying to get the panel to work in a hotel meeting room far from home.



The Sharp QA-1150 panel (top) joins the nView Luminator projector (center) and the In Focus LitePro LS projector (bottom) in our LCD winners' circle.

evaluations but for which tech support was next to impossible to get. After some confusion about where we could obtain it (the company provided us with a phone number different from that in the documentation), we did receive correct answers — after a three-day wait.

### Excess Baggage

Tucking an LCD panel into a briefcase is a great way to make your Mac-based presentations portable, but a panel can't do it alone. You need a Mac, of course, and unless you have a PowerBook, that means you must bring one to or acquire one at your presentation site.

Then you must decide whether to use a monitor in conjunction with the LCD panel for your presentation.

Last, you must decide whether to use a standard OHP or get the metal-halide variety that is recommended by most panel vendors. If you buy an LCD projector, this last hurdle won't

affect you, but you'll lose the portability advantages of a panel and pay more for the privilege.

### Value Judgment

Your decision to purchase a color LCD unit will be based on the value you place on portability and quick access to projected images. You may also be able to squeeze a great deal of value from an LCD system if you share it with others and use it to project video images as well as PC and Mac output. LCD panels and projectors can also make effective additions to a company's in-house audiovisual-equipment room. You have a wide array of choices. Our three favorite products, each of which meets a particular need, are discussed in "The Bottom Line."

Shelly Brisbin is a *MacUser* associate editor. Jeff Pittelkau is *MacUser Labs*' director. Jeffy Milstead, of *MacUser Labs*, managed the testing for this report.

### Table 1 and 2 Criteria

**List price** — The product's retail price.

**Street price** — The average price of the unit at dealers surveyed across the U.S. in February 1993 or through mail order.

**Type** — Whether the unit is an active-matrix or passive-matrix panel or projector.

**Recommended projectors** — The type or the manufacturer of overhead projectors the vendor recommends for use with its unit.

**Mac video interface** — Type of connector jacks for Mac-compatible cables.

**Standard cables** — Cables shipped with the product.

**Optional cables** — Cables available for the product.

**Video support** — Does the unit support the listed type of video source?

**FCC approval** — The type of FCC certification (Class A or Class B). According to the FCC, Class A products should not be sold in the consumer market.

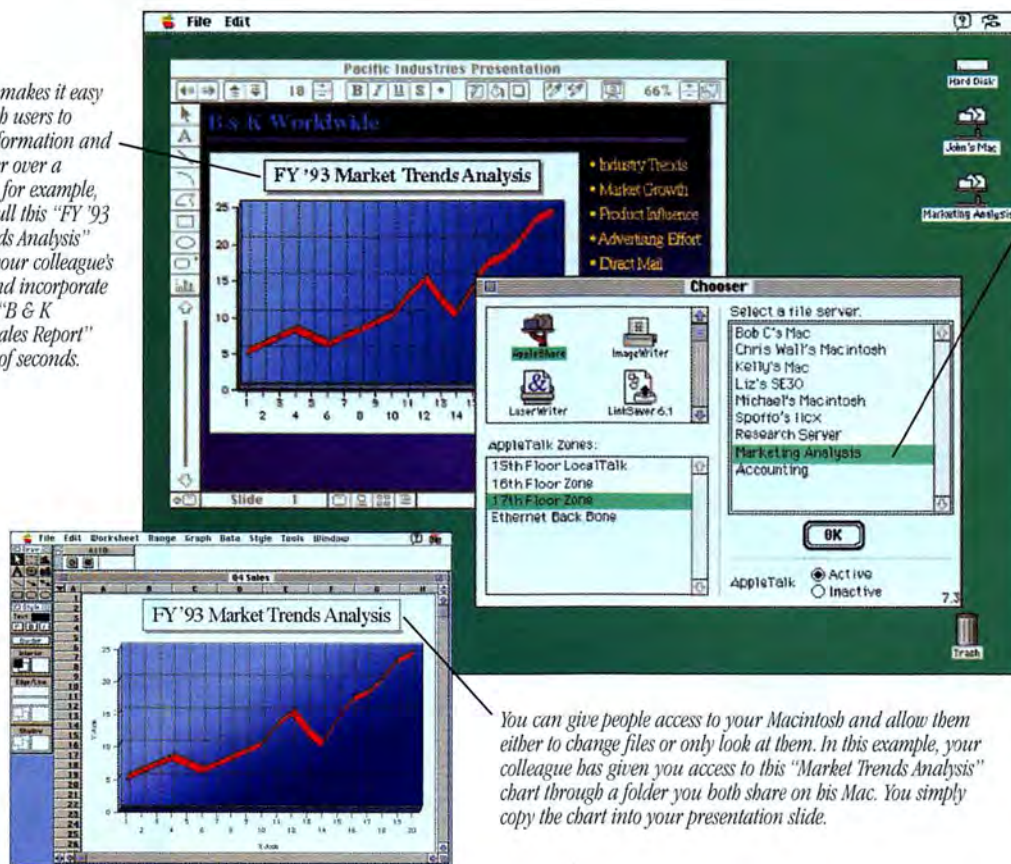
**LCD-panel size** — The length and width of the LCD screen, in inches.

continues ►



# How to pull together 3 months of research in under a minute.

File sharing makes it easy for Macintosh users to exchange information and work together over a network. So, for example, you could pull this "FY '93 Market Trends Analysis" chart from your colleague's computer and incorporate it into your "B & K Worldwide Sales Report" in a matter of seconds.



Each Macintosh user determines which files are shared with which people. To access the chart on your colleague's Mac, you simply open the Chooser and select your colleague's file server or desktop computer name. Which, in this case, happens to be "Marketing Analysis."

You can give people access to your Macintosh and allow them either to change files or only look at them. In this example, your colleague has given you access to this "Market Trends Analysis" chart through a folder you both share on his Mac. You simply copy the chart into your presentation slide.

## File sharing with System 7.

With System 7™ software and its built-in file sharing, putting together a presentation on your Macintosh® has never been easier or quicker. Even when the research you've gathered for it is in someone else's computer.

Now, despite the fact that you and your colleagues may have different schedules, you can still collaborate on a project over your network. Because file sharing enables you to work with files on each other's computers.

You simply give your associates access to any

designated file or folder on your Macintosh, and they can work with your data from their computers.

So let's say, for instance, that your boss walks into your office and asks to see where you're at with your quarterly research summary. But the June findings happen to be on your vacationing partner's Mac.

No problem. With file sharing, you can access your partner's data in moments.

Of course, this is just one of the many ways



System 7 can help make you more productive.

It's also just one of the many reasons why 5 million Macintosh users are now working with System 7, as well as with the more than 6,000 applications available that run on it.





For the name of the Apple® software reseller nearest you, call 1-800-732-3131, ext. 500. Or, if you're a current System 7 user, get the System 7.1 Update Kit by calling 1-800-769-APPLE, ext. 250.

And see how easily System 7 can give you the power to pull your work together fast. The power to be your best.\*

Apple 



## Table 1: Features of LCD Panels

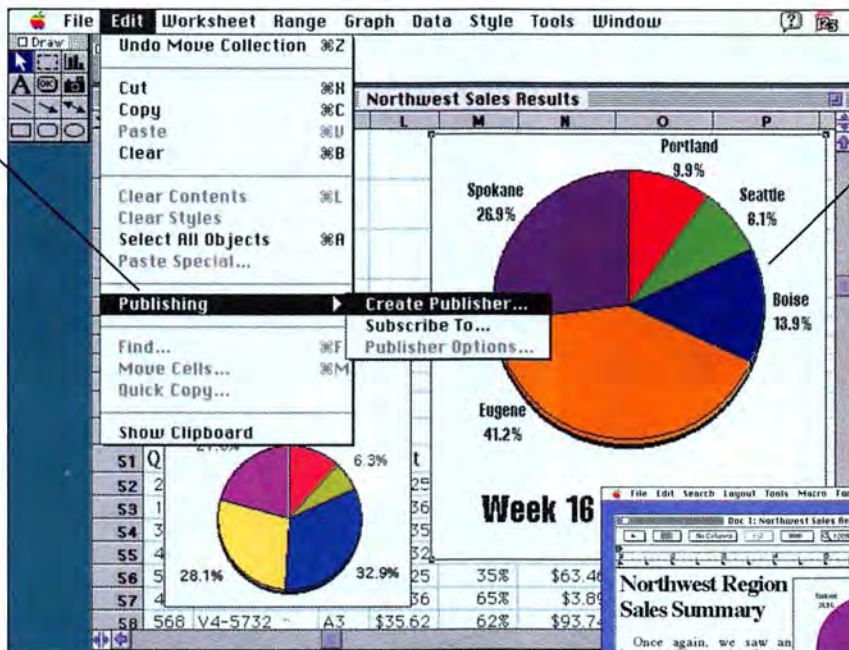
				
	<b>Apollo Vision 16.7</b> \$\$\$	<b>Ask Impact 16.7</b> \$\$\$	<b>Boxlight 640FXA</b> \$\$\$	<b>Chisholm TFT Rainbow 600</b> \$\$\$½
<b>List price</b>	\$7,595	\$6,295	\$2,595	\$4,295
<b>Street price</b>	\$5,600	\$5,800	\$2,595 (direct)	\$3,940
<b>Pros</b>	Slim, hard-shell carrying case.	Slim, hard-shell carrying case.	Easy-to-use on-screen menus.	Simple controls.
<b>Cons</b>	Rotary, analog controls with no default detent positions.	Rotary, analog controls with no default detent positions.	Limited number of colors.	Hard to use with LC. No support for 12-inch monitor.
<b>Specifications</b>				
Type	active-matrix	active-matrix	passive-matrix	active-matrix
Max. number of colors	16.7 million	16.7 million	64	2,197
Recommended projectors	Apollo Eclipse with 400-watt halogen or metal-halide lamp	400-watt halogen or metal-halide	3,800-lumen or greater Dukane 641 or 3M 955	3,000-lumen transmissive
Standard cables	Mac II adapters, VGA Y-cable	Mac II adapters, VGA Y-cable	Mac II Y-cable, VGA Y-cable	Mac Y-cable, VGA Y-cable
Optional cables	EGA/CGA	EGA/CGA	EGA/CGA, PowerBook adapter, SE adapter	none
<b>Video support</b>				
External monitor	●	●	●	●
Composite NTSC	●*	●*	●	●*
S-video NTSC	●*	●*	●	●
PAL	●*	●*	●	●*
CGA	●*	●*	●	●
EGA	●*	●*	●	●
VGA	●	●	●	●
<b>Other</b>				
Cooling fan	●	●	●	●
Remote control	●	●	●	●
FCC approval	Class A	Class A	Class A	Class A
Dimensions (L x W x H)	12.25 x 12.25 x 1.75 in.	12.25 x 12.25 x 1.75 in.	15 x 13.5 x 2.5 in.	13 x 11.75 x 1.75 in.
LCD-panel size (L x W)	8.25 x 6.25 in.	8.25 x 6.25 in.	8.25 x 6.25 in.	8.25 x 6.25 in.
Weight	5 lb	4.4 lb	6.7 lb	5 lb
Warranty	1 year	1 year	1 year	1 year
<b>Company</b>	Apollo 60 Trade Zone Ct. Ronkonkoma, NY 11779 800-777-3750 516-467-8033 516-467-8996 (fax)	Nova Corp. 2260 Lake Ave., Ste. 330 Rochester, NY 14612 716-647-6510 716-647-6512 (fax)	Boxlight Corp. 17771 Fjord Dr. N.E. Poulsbo, WA 98370 800-762-5757 206-779-7901 206-779-3295 (fax)	Chisholm 910 Campisi Way Campbell, CA 95008 800-888-4210 408-559-1111 408-559-0444 (fax)

\*Support provided with optional adapter.



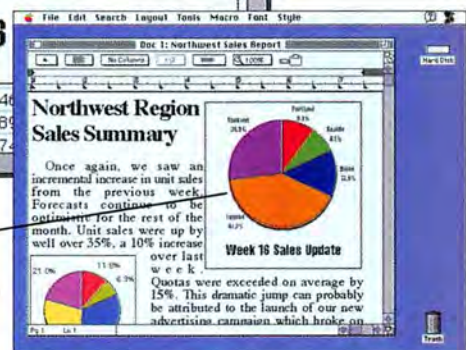
# How to make sure your pies are always fresh.

System 7 lets you create "live links" between documents from different applications with a tool called Publish and Subscribe. By "Publishing" a chart from one document, you can "Subscribe To" it and place it in any number of other documents. When you update the original, all the other charts linked to it are updated automatically.



Select the item you want to publish—in this case, a pie chart in your spreadsheet. Go to the Edit menu and choose "Create Publisher." That's all there is to it. Now your chart is ready for you and others to subscribe to.

From your word processing document, select "Subscribe To" in the Edit menu, and you've placed a copy of the chart in your sales summary. When you make changes to the original chart, this new one will be updated automatically to reflect the changes.



## Up-to-date documents with System 7.

With System 7™ software and a built-in tool called Publish and Subscribe, keeping reports and documents up to date is as easy as, well, you know what.

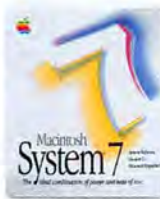
For instance, let's say you're working on a sales report in Microsoft Word. Let's also say that you've created a pie chart in a Lotus 1-2-3 spreadsheet showing your company's most recent sales results, and you want to include this chart in your final report.

Experience tells you, however, that these

sales figures will continue to change right up to the very last minute.

No problem. With the Publish and Subscribe feature, you can publish the pie chart from your spreadsheet and then subscribe to it from within your word processing document.

This creates a "live link" between the two. Now, each time you revise the sales figures in your Lotus spreadsheet, the pie chart will automatically reflect the changes. So your final report will always be revised and up to date.



Of course, this is just one of the many ways System 7 can help make you more productive.

It's also just one of the many reasons why 5 million Macintosh® users are now working with System 7, as well as with the more than 6,000 applications available that run on it.





For the name of the Apple® software reseller nearest you, call 1-800-732-3131, ext. 500. Or, if you're a current System 7 user, get the System 7.1 Update Kit by calling 1-800-769-APPL, ext. 250.

And then see how System 7 can give you the power to keep all your ideas fresh. The power to be your best. Apple





## Table 1: Features of LCD Panels, continued

				
● = yes ○ = no	<b>Chisholm</b> <b>TFT Rainbow HD 700</b> \$\$\$	<b>Dolch</b> <b>P.R.I.S.M.</b> \$\$\$½	<b>In Focus</b> <b>1600LC</b> \$\$\$½	<b>In Focus</b> <b>7000FX+</b> \$\$\$½
List price	\$5,295	\$10,581	\$2,395	\$3,995
Street price	\$4,885	\$10,581 (direct)	\$1,860	\$3,005
Pros	Simple controls.	Attractive design.	On-screen menus. Excellent manuals.	On-screen menus. Excellent manuals.
Cons	Hard to use with LC. No support for 12-inch monitor.	Very expensive.	Limited number of colors.	Poor image quality.
<b>Specifications</b>				
Type	active-matrix	active-matrix/stand-alone	passive-matrix	passive-matrix
Max. number of colors	614,125	185,000	16	24,389
Recommended projectors	3,000-lumen transmissive	5,000-lumen metal-halide transmissive	650-watt or less	650-watt or less
Standard cables	Mac Y-cable, VGA Y-cable	VGA/MCGA, EGA/CGA	Mac II Y-cable, VGA Y-cable, EGA, CGA	Mac II Y-cable, VGA Y-cable
Optional cables	none	Mac II video	AT&T/Olivetti, Hercules, MDA, PS/2 Model 25	AT&T/Olivetti, Hercules, MDA, PS/2 Model 25
<b>Video support</b>				
External monitor	●	○	●	●
Composite NTSC	●*	○	○	○
S-video NTSC	○	○	○	○
PAL	●*	○	○	○
CGA	○	●	●	●*
EGA	○	●	●	●*
VGA	●	●	●	●
<b>Other</b>				
Cooling fan	●	●	●	●
Remote control	○	●	○	●
FCC approval	Class A	Class A	Class A	Class A
Dimensions (L x W x H)	15.5 x 12.5 x 2.25 in.	15.25 x 12.5 x 2 in.	15 x 13.5 x 2.5 in.	15 x 13.5 x 2.5 in.
LCD panel size (L x W)	8.25 x 6.25 in.	8.25 x 6.25 in.	8.25 x 6.25 in.	8.25 x 6.25 in.
Weight	6.8 lb	7 lb	5.9 lb	8 lb
Warranty	1 year	1 year (parts), 2 years (labor)	1 year	1 year
<b>Company</b>	Chisholm 910 Campisi Way Campbell, CA 95008 800-888-4210 408-559-1111 408-559-0444 (fax)	Dolch Computer Systems 372 Turquoise St. Milpitas, CA 94019 800-538-7506 408-957-6575 408-263-6305 (fax)	In Focus Systems, Inc. 7770 S.W. Mohawk St. Tualatin, OR 97062 800-327-7231 503-692-4968 503-692-4476 (fax)	In Focus Systems, Inc. 7770 S.W. Mohawk St. Tualatin, OR 97062 800-327-7231 503-692-4968 503-692-4476 (fax)

\*Support provided with optional adapter.



# Maybe they'd get more involved if your presentation had a higher I.Q.\*

**\*Image Quality, that is.**

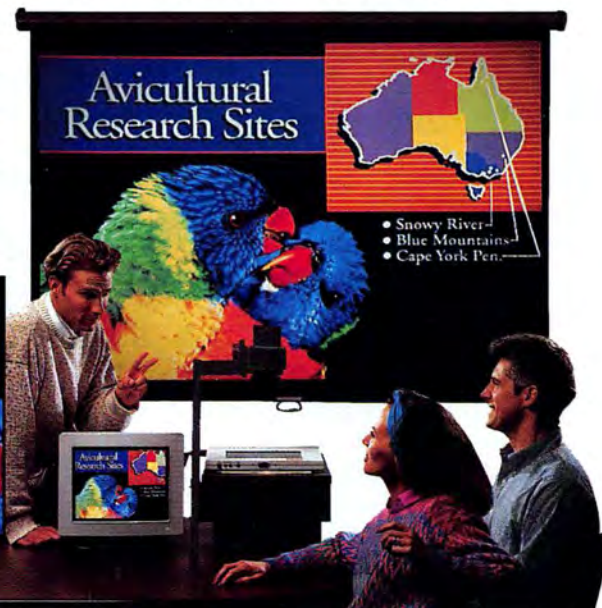
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Above right: Actual computer monitor image.  
Above: Actual projection screen image from Ovation LCD projection panel.

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**CIRCLE 82 ON READER SERVICE CARD.**



**Table 1: Features of LCD panels, continued**

				
● = yes ○ = no	<b>In Focus TVT-3000</b> \$\$\$½	<b>nView MediaPro</b> \$\$\$	<b>nView ViewFrame Spectra C</b> \$\$\$½	<b>Proxima ColorWorks</b> \$\$\$½
<b>List price</b>	\$4,995	\$7,995	\$4,995	\$4,495
<b>Street price</b>	\$4,040	\$6,500	\$3,900	\$3,575
<b>Pros</b>	On-screen menus. Excellent manuals.	Good colors.	Good image quality.	Excellent remote control. Built-in speaker.
<b>Cons</b>	Dim image.	Adjustments only by remote.	Adjustments only by remote.	Requires external monitor or terminator. Expensive for passive-matrix panel.
<b>Specifications</b>				
Type	active-matrix	active-matrix	active-matrix	passive-matrix
Max. number of colors	1.4 million	262,144	185,193	24,389
Recommended projectors	halogen or metal-halide arc	650-watt or less, high-lumen, cold-mirror-light reflection	transmissive, reflective- glass cooling	3,000-lumen or more halogen
Standard cables	Mac II Y-cable, VGA Y-cable	Mac II Y-cable, VGA Y-cable, RCA, BNC/RCA adapter	Mac II Y-cable, VGA monitor, EGA/CGA/Mac video adapter	Mac Y-cable, VGA Y-cable, serial
Optional cables	AT&T/Olivetti, Hercules, MDA, PS/2 Model 25	EGA		AT&T/Olivetti, EGA/CGA, Hercules, MDA
<b>Video support</b>				
External monitor	●	●	●	●
Composite NTSC	○	●	●*	○
S-video NTSC	○	●	○	○
PAL	○	●	●*	○
CGA	●*	○	●	●*
EGA	●*	●	●	●*
VGA	●	●	●	●
<b>Other</b>				
Cooling fan	●	●	●	●
Remote control	●	●	●	●
FCC approval	Class A	none	none	Class A
Dimensions (L x W x H)	15 x 13.5 x 2.5 in.	15.8 x 12.7 x 2.6 in.	14.75 x 12.75 x 2 in.	13.25 x 13.5 x 1.5 in.
LCD panel size (L x W)	8.25 x 6.25 in.	8.31 x 6.24 in.	6.75 x 5 in.	8.25 x 6.25 in.
Weight	7 lb	8.75 lb	6.7 lb	6 lb
Warranty	1 year	1 year	1 year	1 year
<b>Company</b>	In Focus Systems, Inc. 7770 S.W. Mohawk St. Tualatin, OR 97062 800-327-7231 503-692-4968 503-692-4476 (fax)	nView Corp. 860 Omni Blvd. Newport News, VA 23606 800-736-8439 804-873-1354 804-873-2153 (fax)	nView Corp. 860 Omni Blvd. Newport News, VA 23606 800-736-8439 804-873-1354 804-873-2153 (fax)	Proxima Corp. 6610 Nancy Ridge Dr. San Diego, CA 92121 800-447-7694 619-457-5500 619-457-9647 (fax)

\* Support provided with optional adapter.





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that can even enlarge or freeze your images. Plus, an optional backlight to convert your panel into a direct view monitor. So why not put the power of 16 million colors into your next presentation. The QA-1650. From Sharp's complete line of LCD Projection Panels. See your local authorized Sharp Industrial LCD Products Dealer for a demonstration. Or call 1-800-BE-SHARP Ext. 333.

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CIRCLE 184 ON READER SERVICE CARD.



**Table 1: Features of LCD Panels, continued**

				
● = yes ○ = no	<b>Proxima Ovation</b> ★★★★	<b>Sharp QA-1150</b> ★★★★	<b>Telex Magnabyte SC</b> ★★★★½	<b>Telex Magnabyte 1000</b> ★★★★½
<b>List price</b>	\$7,995	\$4,995	\$4,995	\$3,995
<b>Street price</b>	\$6,125	\$4,425	\$4,525	\$3,525
<b>Pros</b>	Excellent remote control. Built-in speaker.	Bright display. Feature-rich.	Simple controls.	Simple controls.
<b>Cons</b>	Requires external monitor or terminator.	Poor tech support.	Hard to use with LC.	Hard to use with LC.
<b>Specifications</b>				
Type	active-matrix	active-matrix	active-matrix	active-matrix
Max. number of colors	226,681	185,000	614,000	2,197
Recommended projectors	3,000-lumen or more halogen	400-watt or less metal-halide transmissive	transmissive	400-watt or less transmissive
Standard cables	Mac Y-cable, VGA Y-cable, RCA, serial	Mac II Y-cable, VGA/MCGA Y-cable	Mac II Y-cable, VGA Y-cable	none
Optional cables	AT&T/Olivetti, EGA/CGA, Hercules, MDA	CGA/EGA Y-cable	none	Mac II Y-cable
<b>Video support</b>				
External monitor	●	●	●	●
Composite NTSC	●	●	○	○
S-video NTSC	●	○	○	○
PAL	●	●	○	○
CGA	●*	●	○	○
EGA	●*	●	○	○
VGA	●	●	●	●
<b>Other</b>				
Cooling fan	●	●	●	●
Remote control	●	●	○	○
FCC approval	Class A	Class A	Class A	Class A
Dimensions (L x W x H)	13.25 x 13.5 x 1.5 in.	14 x 12 x 2 in.	15.5 x 12.25 x 2.25 in.	13 x 11.75 x 1.75 in
LCD panel size (L x W)	8.25 x 6.25 in.	6.75 x 5 in.	8.25 x 6.25 in.	8.25 x 6.25 in.
Weight	6 lb	6.7 lb	6.5 lb	5 lb
Warranty	1 year	1 year	1 year	1 year
<b>Company</b>	Proxima Corp. 6610 Nancy Ridge Dr. San Diego, CA 92121 800-447-7694 619-457-5500 619-457-9647 (fax)	Sharp Electronics Corp. LCD Products Group Sharp Plaza, Mail Stop One Mahwah, NJ 07430 800-237-4277, ext. 555 201-529-8731 201-529-9636 (fax)	Telex Communications 9600 Aldrich Ave. Bloomington, MN 55420 800-828-6107 612-884-4051 612-884-0043 (fax)	Telex Communications 9600 Aldrich Ave. Bloomington, MN 55420 800-828-6107 612-884-4051 612-884-0043 (fax)

\* Support provided with optional adapter.



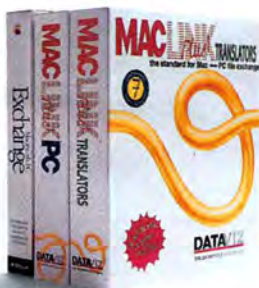


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Now every  
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and Macintosh  
Easy Open.



Macintosh PC Exchange makes DOS disks appear on the Mac desktop and shows their contents as Macintosh files and folders. New Macintosh Easy Open is a System 7™ extension that helps you open Mac or PC files when the application that created them isn't on your Mac. These technologies from Apple teamed with our translators offer the most complete solution to file transfer and translation available in a single package.

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MS-DOS emulators such as SoftPC, and network software such as NetWare and LANtastic. Let MacLinkPlus do the work of converting foreign files transferred with these products into the exact format you need. MacLinkPlus/Translators contains the full translator library, Macintosh PC Exchange and Macintosh Easy Open. While MacLinkPlus/PC has all of these, it also allows you to connect a Mac and PC with the included serial cable or via modems.

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CIRCLE 172 ON READER SERVICE CARD.



## Table 2: Features of LCD Projectors

				
● = yes ○ = no	<b>In Focus LitePro LS</b> ★★★★	<b>In Focus System 6000</b> ★★★★½	<b>nView Luminator</b> ★★★★½	<b>Sharp XG-2000U</b> ★★★★½
List price	\$6,995	\$7,995	\$10,995	\$6,500
Street price	\$5,540	\$6,765	\$9,125	\$5,790
Pros	Very good image quality for a passive-matrix projector. Excellent manuals.	Good image quality. Excellent manuals.	Bright, attractive image. Feature-rich.	Very crisp and bright image.
Cons	Not suitable for photo-realistic images.	Resolution less than Mac's. Requires scan converter (included).	Bulky, noisy.	Requires third-party scan converter with Mac. Poor tech support.
<b>Specifications</b>				
Type	passive-matrix	active-matrix	active-matrix	active-matrix
Max. number of colors	4,913	16.7 million	262,144	16.7 million
Mac video interface	integrated	custom scan converter	integrated	third-party scan converter
Standard cables	Mac II Y-cable, VGA Y-cable	Mac II Y-cable, VGA Y-cable	Mac II video, Mac II monitor, VGA Y-cable, RCA, BNC/RCA adapter	analog RGB, D-sub converter
Optional cables	AT&T/Olivetti, Hercules, MDA, PS/2 Model 25	AT&T/Olivetti, Hercules, MDA, PS/2 Model 25	EGA	none
<b>Video support</b>				
External monitor	●	●	●	●
Composite NTSC	○	●	●	●
S-video NTSC	○	●	●	●
PAL	○	○	●	○
CGA	●*	●	○	●
EGA	●*	●	●	●
VGA	●	●	●	●
<b>Other</b>				
Cooling fan	●	●	●	●
Remote control	●	●	●	●
FCC approval	Class A	Class A	Class A	Class A
Dimensions (L x W x H)	17.5 x 11.25 x 7.25 in.	14 x 17 x 5.5 in.	20 x 18.5 x 11 in.	17 x 10 x 12 in.
Weight	19 lb	24 lb	40 lb	27.8 lb
Warranty	1 year	1 year	1 year	1 year (on-site)
<b>Company</b>	In Focus Systems, Inc. 7770 S.W. Mohawk St. Tualitin, OR 97062 800-327-7231 503-692-4968 503-692-4476 (fax)	In Focus Systems, Inc. 7770 S.W. Mohawk St. Tualitin, OR 97062 800-327-7231 503-692-4968 503-692-4476 (fax)	nView Corp. 860 Omni Blvd. Newport News, VA 23606 800-736-8439 804-873-1354 804-873-2153 (fax)	Sharp Electronics Corp. LCD Products Group Sharp Plaza, Mail Stop One Mahwah, NJ 07430 800-237-4277, ext. 555 201-529-8731 201-529-9636 (fax)

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# HAMMER





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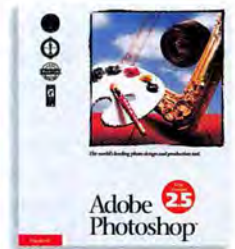
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# Superfast-Server *Secrets*

BY HENRY BORTMAN

*t*here's a reason why a lot of companies are abandoning AppleShare and adopting Novell NetWare or some other non-Mac-based file-server software. Sure, AppleShare is easy to use, for users as well as for network administrators. But its major drawback is glaringly obvious: When running on a LocalTalk network, it's too darn slow.

There are three main causes of this shortcoming. First, AppleShare was never designed to be a speed demon. For example, even if you load up a Mac running AppleShare 3.0.1 (the version that was shipping at press time) with scads of RAM, it won't do you any good. AppleShare Server 3.0.1 doesn't have a caching scheme that can take advantage of lots of RAM. Caching is a critical speed-enhancement

*AppleShare file-server software isn't noted for its stellar speed. But you can improve it — if you know where the bottlenecks are.*

PHOTOGRAPHY: FRED STIMSON





Macintosh  
Quadra 950



feature of nearly every other file server on the market — but not of an AppleShare server. Unfortunately, there's not much you can do about AppleShare's poor design except wait for Apple to improve on it. Fortunately, it's about to do just that, with AppleShare 4.0 and AppleShare Pro, which should be shipping by the time you read this (see the "AppleShare Turns Pro" sidebar).

The second contributor to AppleShare's slowness is the Mac's operating system. Although System 7 (required by AppleShare 3.0.1) may appear to support *multitasking* — it does let you run several programs at the same time — System 7's multitasking is not the kind that file servers need to provide maximum speed. File servers need to be able to juggle lots and lots of balls — user requests for data — in rapid succession. They should be good about jumping from one task to another, managing system resources efficiently. Unfortunately, System 7 doesn't cut it — it's not as agile at application switching and multiple-request management as a true multitasking operating system. Fortunately, the upcoming AppleShare Pro will run under A/UX, Apple's implementation of the familiar UNIX workstation operating system, which has precisely the kind of capabilities a file server needs to do its work quickly.

The third hindrance to AppleShare speed is the Mac on which AppleShare runs. Unfortunately, a lot of AppleShare users don't know how to set up their AppleShare servers and networks for optimum speed. Fortunately, this third bottleneck is the one area influencing AppleShare speed that you can improve — if you know what you're doing. Simply throwing faster

## AppleShare Turns Pro

As this report was going to press, some folks from Apple's ESD (Enterprise Systems Division) gave us a call. "You know all that stuff you're going to say about how slow AppleShare is? We're going to fix it. We're coming out with a new version of AppleShare. We're going to run it under A/UX, and we're going to add a PDS [processor-direct slot] card to the Quadra 950 that will improve AppleShare's performance two to three hundred percent."

As with all manufacturers' claims, our response was, "We'll believe it when we see it — or, better yet, test it." But the information the ESD spokespeople gave us was tantalizing: There will be not one but two new versions of AppleShare: AppleShare 4.0 and AppleShare Pro. They will be essentially the same, but AppleShare 4.0 will be sold bundled with either a Centris 610 or a Quadra 800 and AppleShare Pro will be bundled with a Quadra 950 outfitted with a special PDS card and a slightly upgraded version (3.0.1) of A/UX, Apple's version of the UNIX operating system for the Mac. The Centris 610 and the Quadra 800 bundles

will be called, respectively, the AppleShare Workgroup Server 60 and the AppleShare Workgroup Server 80. The AppleShare Pro and Quadra 950 bundle will be called the AppleShare Workgroup Server 95.

Intended as an entry-level server, the Workgroup Server 60 is targeted at small network setups — small businesses, educational establishments such as classrooms or resource centers, and small workgroups — where network traffic and demands on the server are light. According to Apple, the Workgroup Server 60 should support 5 to 120 simultaneous users. The midrange Workgroup Server 80 is intended primarily as a file/print server or gateway/mail server and is designed to support 10 to 20 active users. The Workgroup Server 95, designed for large networks with heavy demands, should be able to handle the simultaneous demands of 20 to 50 users.

The new versions of AppleShare will take advantage of large quantities of RAM allocated to the AppleShare application, using data caching. However, that's the only major difference you'll find between

**Simply throwing faster hardware at your server problem won't help — you have to know which hardware will help and which won't.**

hardware at your problem won't help — you have to know which hardware will help and which won't.

Through an extensive series of tests at ZD Labs' 50-node network-testing center (see the "How We Tested Servers" sidebar), we identified the three hardware bottlenecks in an AppleShare system that are most likely to limit the system's usefulness: the network, the server's hard-disk drive, and the server CPU itself — in that order.

### No Cache Transactions

First, a bit of advice for those who plan to speed up AppleShare by adding lots of RAM to their server Mac and then increasing either the amount of memory assigned to the AppleShare file-server application or to the server Mac's disk cache: Don't bother. As mentioned before, neither AppleShare nor System 7 is designed to take advantage of an infusion of RAM — if you'll pardon the pun, they simply can't cache in on it.

A cache is supposed to speed things

up by storing frequently used data in memory, which can be accessed more quickly than data sitting on a hard disk. But in one test we performed, we discovered that AppleShare speed can actually degrade if you set System 7's disk cache in the Memory control panel greater than 786K. With too large a cache, the Mac spends more time searching the cache to determine whether or not the data you need is there than it would just getting the data directly off the disk. We also found that increasing the amount of memory assigned to the AppleShare file-server application in its Get Info box had no effect on speed. Our recommendation: Leave the application-memory setting at the default, and set the disk cache to a lean and mean 128K.

### Raising the Speed Limit

Having decided that the amount of RAM was not an issue, we next looked at the interaction of three factors: network bandwidth, hard-drive speed, and CPU speed. We compared



AppleShare Server 3.0.1 and the new versions: Other features long requested by users, such as better security and the ability to boot a diskless Mac directly from the server, will not be included. Apple estimates that AppleShare 4.0 will outperform AppleShare 3.0.1 by 200 percent and that AppleShare Pro will outdo 3.0.1 by even more.

The really exciting server is the Workgroup Server 95, which will run AppleShare Pro. Two features will provide it with the muscle to run circles around AppleShare 3.0.1 servers. First, it will contain a PDS card with two channels of DMA SCSI and additional cache memory. DMA (direct memory access) SCSI is capable of moving data directly from disk into the Mac's memory, without having to first go through the Mac's CPU. So when the server needs to read data from or write data to its hard disks — one of a server's major activities — it won't have to wait until the Mac's CPU is available to manage the transfer. The lack of DMA SCSI is one of the major limitations on the server efficiency of earlier Macs.

The Workgroup Server 95's second

advantage is that AppleShare Pro will run under A/UX rather than under System 7. Part of UNIX's design is its ability to take full advantage of system RAM for caching data. AppleShare Pro will thus be able to gain extra speed from the system-RAM cache on the Workgroup Server 95's PDS card in addition to the application-RAM cache that will be available with the new version of AppleShare.

Configurations for these new server systems weren't available at press time, but Apple says configurations will include much larger complements of RAM than are common on today's Macs. Workgroup Servers will also be available with larger hard drives, including 500-megabyte and 1-gigabyte drives, than those previously sold by Apple.

Pricing was also not set at press time, but you can expect prices to be in the range of \$3,000 to \$4,000 for the Workgroup Server 60, between \$6,000 and \$10,000 for the Workgroup Server 80, and \$8,000 to \$13,000 for the Workgroup Server 95.

— Henry Bortman

AppleShare speed on LocalTalk and Ethernet networks, with slow and fast hard drives, and with slow and fast Macs (including the use of CPU-accelerator cards in the slower Macs). Our irrefutable conclusion: Your network is the first place you should invest if you want to improve AppleShare speed.

LocalTalk network capability is built in to every Mac. This free connectivity capability accounts for the relatively high percentage of Macs that are networked compared with PCs. However, it also accounts for the sluggishness of many network services such as AppleShare, because LocalTalk can transfer a maximum of only 230.4 kilobits of data in one second. No matter what you do, you can't shove more data than that across a LocalTalk network — and you'll usually be limited to even less, because of traffic and network overhead. Most 68020-, 68030-, or 68040-based Macs used as servers can easily handle this rate of data throughput. So can most hard drives,

even relatively slow ones. Which is why if you're not bumping up against LocalTalk's limitations, you're probably not taxing your server's CPU or hard drive either.

To prove this point, we set up a network that contained 30 Mac client nodes. All but one of the nodes were instructed to read a 1K file from or write it to the server every 30 seconds, in a staggered pattern. The server platform was a Mac IIx (which contains a 20-megahertz 68030) outfitted with Apple's standard 80-megabyte Quantum internal hard drive. With our relatively light 30-client load running in the background, we timed the transfer of a 500K file from the server to a single Mac IIx. We tried this test on both a LocalTalk and an Ethernet network. The result? On LocalTalk, the file transfer took close to 2 minutes; on Ethernet, it took a little less than 1 (see Figure 1).

To make sure the network was really the primary bottleneck, we tried a second LocalTalk-versus-Ethernet test. This time, we outfitted the IIx with a Fusion Data Systems Toka-Mac SX 25-megahertz CPU accelerator (which contains the same 25-megahertz 68040 processor as that in the Quadra 700) and with a super-fast hard drive, FWB's Hammer 1000FMF (which uses Digital's DSP3105 mechanism).

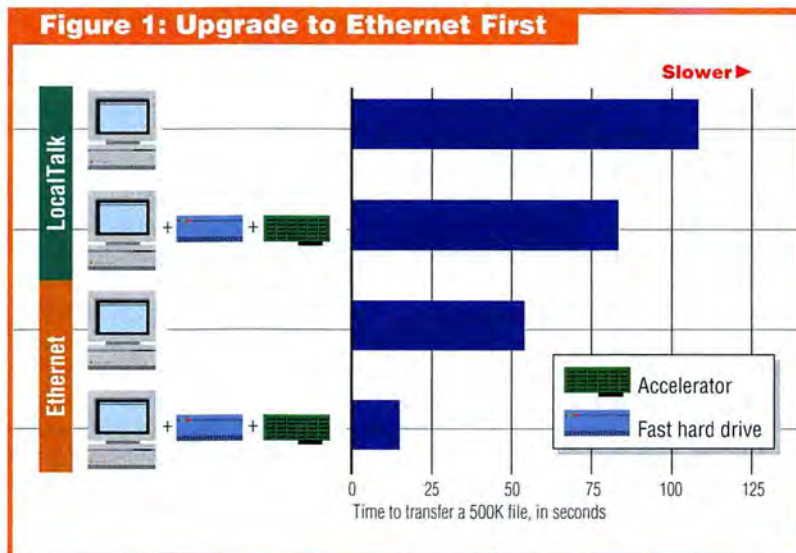


Figure 1: Although a IIx server can be enhanced significantly by adding a fast hard drive and a 68040-based accelerator, these upgrades will have little effect if the server is on a LocalTalk network. Our test network had 30 active nodes.



This time the result was even more dramatic. Despite the substantial increase in CPU and hard-drive speed, the LocalTalk file-transfer time decreased only marginally, going down from a little less than 2 minutes in the first test to less than 1.5 minutes in the second. The same combination of CPU and hard drive on Ethernet, however, slashed the transfer time to a mere 15 seconds. The conclusion is clear: Speeding up your server CPU and hard drive won't gain you much if you're using a LocalTalk network. LocalTalk's bandwidth is simply too limited to let you take advantage of fast server hardware.

We recommend that you start your AppleShare-improvement program

by upgrading your network to Ethernet. Built-in Ethernet is standard on Quadras and is available as an option on Centris Macs, and it may well find its way into lower-end Macs — and even PowerBooks — in the next few years. For those who

have Macs without built-in Ethernet, prices of add-on Ethernet network-interface cards have come down to as low as \$100 a pop. Ethernet is the future of Macintosh networking.

Despite the low cost of interface cards, however, moving up to Ethernet can be expensive — you may need to rewire if your current wiring isn't good enough to reliably support the popular Ethernet 10BASE-T standard. But there is an alternative, from Tribe Computer Works: the \$1,795 TribeStar hub. Connecting LocalTalk Macs to a TribeStar hub can gain you some of the advantages of Ethernet's speed without requiring you to wire all of your client Macs for Ethernet (see the "Transitional Ethernet: TribeStar" sidebar).

### Disk Is It

Having found that LocalTalk is the first bottleneck to address when you're trying to improve an AppleShare setup, we performed the rest of our tests with all of our test Macs connected via Ethernet, using Asanté's MacCon Ethernet cards on our test LCs, IIsi's, and IIfx's and the built-in Ethernet on the Quadra 700s. Because Ethernet can handle much more data per second than LocalTalk can, we also upped the ante on our network load by using progressively larger network-client loads, from 10 to 50 nodes, to mimic the network traffic in a busy office. In each test, all but one client node read a 100K file from the server every 30 seconds (again, these transfers were staggered). With this traffic in the background, we timed the transfer of a 5-megabyte file from the server to the remaining client.

We examined several server-hardware configurations, using this test setup. We first ran our test battery on three "baseline" machines: a IIsi with an Apple-supplied 80-megabyte Quantum drive, a IIfx with an Apple-supplied 160-megabyte Quantum drive, and a Quadra 950 with an Apple-supplied 230-megabyte Quantum drive. The Quantum 80 and 160 are relatively slow drives, and the Quantum 230 is a midspeed drive.

We then ran three additional sets of tests for each platform. First, using the Apple-supplied drive, we accelerated each CPU, using a 68040-based Fusion Data Systems TokaMac SX 25-megahertz accelerator on the IIsi, a 68040-based TokaMac FX 33-megahertz accelerator on the IIfx, and a DayStar 128K FastCache cache card on the Quadra 950. Next, we replaced each server Mac's Apple-supplied drive with a fast FWB Hammer 1000FMF 1-gigabyte drive. Finally, we tested each server platform with both its respective accelerator upgrade and the FWB Hammer 1000FMF drive.

What we found was this: Adding a fast hard drive to your server Mac

### Figure 2: Mac IIsi = Quadra

#### Mac IIsi

A Mac IIsi can be as fast as a Quadra 950. When we replaced a Mac IIsi AppleShare server's Apple-supplied 80-megabyte hard drive with a high-speed hard drive — an FWB Hammer 1000FMF based on Digital's DSP3105 mechanism, in our tests — the IIsi kept pace with a Quadra 950 AppleShare server equipped with Apple's 230-megabyte drive. A 68040-based TokaMac SX 25-megahertz accelerator from Fusion Data Systems also improved the Mac IIsi AppleShare server's speed — but not as sharply as the fast hard drive.

#### Mac IIfx

A Mac IIfx also benefits from the addition of a fast hard drive, which boosts a IIfx AppleShare server's speed well beyond that of a stock Quadra 950. Adding a 68040-based TokaMac FX 33-megahertz accelerator actually slows AppleShare server speed — if only slightly.

#### Mac Quadra 950

Adding a fast hard drive to a Quadra 950 AppleShare server makes it the fastest AppleShare server available. But a DayStar FastCache card — a powerful addition to a Quadra workstation — slows Quadra 950 AppleShare server speed during 50-node tests and provides little if any boost at other testing levels.

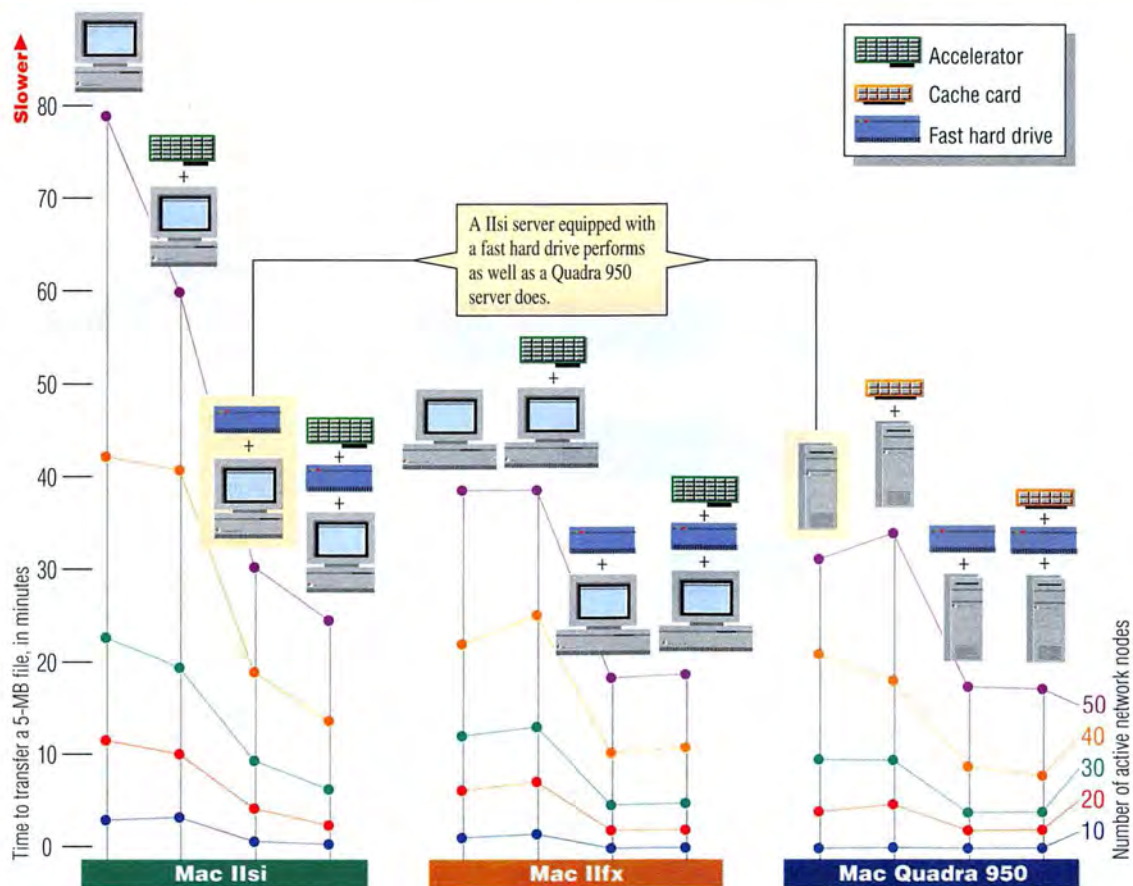
### How We Tested Servers

There are two truisms about networks: They come in all shapes and sizes, and there's no such thing as typical network use. Despite these cautions, our task was to create a generic network and to generate enough traffic on it to challenge the server to the point at which we could test various ways to remove bottlenecks that affect server speed.

To create a simulation of a busy office network, we used the 50-Mac test network at ZD Labs, which includes a mix of 68020-, 68030-, and 68040-based clients: 10 LCs with 4 megabytes of RAM each, 10 IIsi's with 5 megabytes of RAM each, 20 IIfx's with 5 megabytes of RAM each, and 10 Quadra 700s with 8 megabytes of RAM each. All were running System 7.0.1 with Apple's Tune-Up 1.1.1, Network Software Installer 1.2.3, and AppleShare 3.0 client software.

**We found that adding a fast hard drive to your server Mac results in a dramatic improvement in the server's speed.**





In each client Mac, for consistency, we installed an 80-megabyte Quantum LPS hard drive identical to the 80-megabyte drives provided by Apple. We used the Quadras' built-in Ethernet and used Asanté Ethernet cards in the remaining 40 Macs. While Ethernet testing was in progress, all 50 Macs were connected by a Cabletron System M8PSM concentrator. During LocalTalk testing, we used Farallon PhoneNET connectors running to a PhoneNET Star Controller.

We wrote an MPW (Macintosh Programmer's Workshop) script to create a simulation of the background traffic on a busy network. Installed on each client, this script directed the client to create a set of ten 100K files on the server and then read each file in succession, pausing for 30 seconds between each reading and adding a 10-byte string to

each file after reading it. To vary the load, we ran this traffic simulation by using 10, 20, 30, 40, and 50 client Macs.

To uncover the bottlenecks at each of these load levels and to test ways to eliminate them, we used three server platforms — a IIx, a IIx, and a Quadra 950 — in four configurations. First, we tested each server Mac without an accelerator card and with its original Apple-installed Quantum drive. Second, we added a CPU accelerator or a cache card — a 25-megahertz Fusion Data TokaMac SX in the IIx, a 33-megahertz Fusion Data TokaMac FX in the IIx, and a DayStar 128K FastCache cache card in the Quadra 950. Third, we removed the accelerators and the cache card and upgraded the hard drive to a fast 1-gigabyte FWB Hammer 1000-FMF, which uses the high-performance

Digital DSP3105 mechanism. Finally, we reinstalled the accelerators and the cache card along with the FWB Hammer 1000FMF.

To test the speed of each of the server Macs in these configurations, we used the Finder to copy a file from it to a client under different network-traffic loads, using a 5-megabyte file for Ethernet-only testing and a 500K file for LocalTalk-versus-Ethernet testing. For each network load and server configuration, we timed five operations, deleting the copied file and clearing RAM by rebooting the client Mac between iterations.

When all was said, done, and tested, we had gathered data for three Macs in four configurations under five loads for five separate operations: a total of 300 tests on the 50-node network at ZD Labs.

— Julie Baher



**Transitional Ethernet: TribeStar**

Although some vendors have slashed the price of Mac Ethernet-interface cards to as low as \$100, the cost of these cards is often not the largest part of the total cost of an Ethernet upgrade. Wiring is. The widely popular 10BASE-T Ethernet standard requires four wires to carry data across the network, as opposed to the two wires needed by LocalTalk. If your office is wired for LocalTalk, without spare wires for expansion, you may find yourself spending many times as much money on adding wire for each user as you do on each interface card. Such rewiring jobs can also cause serious disruption to work flow, so a lot of people are hesitant to take the plunge.

Tribe Computer Works has developed a solution that lets LocalTalk users get some of the advantage of Ethernet without the pain of a complete 10BASE-T Ethernet-network upgrade. It's a hybrid hub called the TribeStar, and it costs \$1,795. If your LocalTalk network is already wired in a star configuration, with wires from each user's Mac going to a star hub in a central wiring closet, you may be able to simply plug in the TribeStar in place of your existing star hub and be off and running — faster than before.

One unique feature of the TribeStar is that one of its ports is an Ethernet port. On a standard LocalTalk star hub, all the ports are LocalTalk. The TribeStar has an internal bridge between the LocalTalk and the Ethernet ports, so all the devices attached to it appear to be on the same network. Place your server on the Ethernet port, and each LocalTalk port will have separate access to it. This Ethernet-server/LocalTalk-client setup is how the TribeStar achieves its performance gains. Without a TribeStar, everyone is on the same slow LocalTalk network; with a TribeStar, the Ethernet-based server talks with eight separate LocalTalk networks.

To understand this setup, imagine 30 nodes, one of them an AppleShare server, all connected to a standard LocalTalk star hub. Data cannot be transferred to or from the server faster than

the bandwidth limit of LocalTalk: 230.4 kilobits per second. If two, three, or more client nodes want to copy data from the file server at the same time, they all have to share the bandwidth of the LocalTalk port on the server Mac.

Now, imagine that the server is put onto Ethernet and that the hub is capable of maintaining as many as eight separate "conversations" — virtual networks, if you will — at the same time. This would mean that the server, now communicating at Ethernet

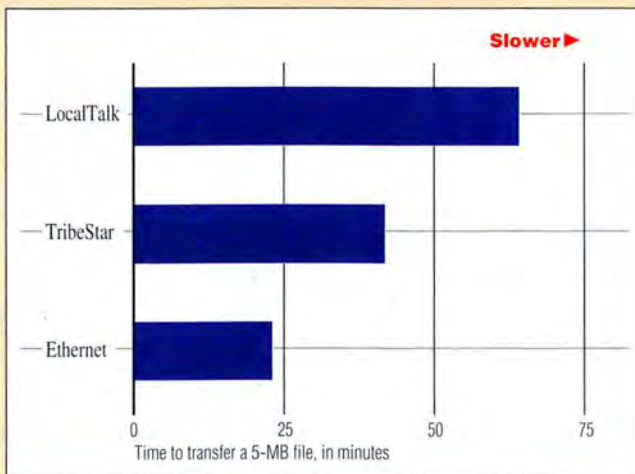
speed, could support eight client nodes, each communicating at the full LocalTalk bandwidth of 230.4 kilobits per second. A dramatic improvement, wouldn't you say?

This is precisely what the TribeStar does. In our tests in ZD Labs' network lab, we distributed 29 client Macs among seven of the TribeStar's eight LocalTalk ports and put a IIx server on its Ethernet port. We then ran our standard Ethernet tests: All the clients but one read a 100K file from the server every 30 seconds, and the last client, which was on the TribeStar's eighth port, read a 5-megabyte file from the server. The test results showed the TribeStar to be very cost-effective.

This same 30-node test, run with both the server and all the clients on LocalTalk, took 64 minutes to complete. When all the nodes — clients and server — were connected to Ethernet, the test took only 23 minutes. The TribeStar split the difference, completing the test in 42 minutes.

A hidden advantage of the TribeStar is that it facilitates a slow transition from LocalTalk to Ethernet. Nothing prevents you from putting additional nodes onto the Ethernet port of the hub. So if you have two or three users who have very heavy network data-transfer needs, you can add them to Ethernet along with the server, keeping your hardware-upgrade and wiring costs to a minimum. Tribe Computer Works, 1195 Park Avenue, Suite 211, Emeryville, CA 94608; 510-547-7800, 510-547-3928 (fax).

— Henry Bortman



**In actual use, AppleShare used on an Ethernet network can provide data about three times as fast as it can on LocalTalk. The TribeStar, a modified LocalTalk star hub with a single Ethernet port, can boost your server's output by about 1.5 times, for far less money than the cost of a complete Ethernet network upgrade. Our test network had 30 active nodes.**

results in a dramatic improvement in the server's speed. However, accelerating any but the slowest server Mac is of dubious value — and if your server doesn't already have a fast hard drive, accelerating even a slow server is a waste of money.

With the IIx, for example, we found that adding the TokaMac SX 25-megahertz accelerator without

first upgrading the IIx's stock 80-megabyte hard drive yielded a small improvement in file-transfer times, averaging around 10 percent (see Figure 2). Replacing the IIx's 80-megabyte drive with the speedy FWB Hammer 1000FMF 1-gigabyte hard drive, on the other hand, resulted in a 50- to 60-percent decrease in file-transfer times. Configured in this

way, the IIx server ran almost neck-and-neck with a stock Quadra 950 AppleShare server (with the Apple-supplied 230-megabyte Quantum drive). Adding both upgrades (the Hammer drive and the 25-megahertz TokaMac SX) to the IIx enabled it to outperform the Apple-shipped Quadra 950.

The results when we used a IIx as



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the server were even more interesting. Unenhanced, the file-transfer times for the IIfx server (with the 160-megabyte Quantum drive supplied by Apple) were around 25 percent longer than those with the stock Quadra 950 server (with the Apple-supplied 230-megabyte Quantum drive). However, adding a 33-megahertz TokaMac FX accelerator to the IIfx — which uses the same 33-megahertz 68040 processor as in the Quadra 950 — without first upgrading the IIfx's hard drive actually *increased* file-transfer times by an average of 10 percent.

We saw a similar result with the IIfx when we tested it with the fast FWB Hammer 1000FMF 1-gigabyte drive. With the addition of the drive only, the IIfx server transferred our 5-megabyte test file in 30 to 50 percent less time than did an unenhanced Quadra 950 server. However, adding both the 33-megahertz TokaMac FX and the Hammer 1000FMF drive made the IIfx take just a shade longer than with the Hammer 1000FMF alone.

Our conclusion: The IIfx, when used as an AppleShare server, definitely does not benefit from the addition of a CPU accelerator — even if it's as high-speed an accelerator as



**The boost you'll get from jumping up to a Quadra 950 is probably not worth the money; instead, get the fastest hard drive you can afford.**


the 33-megahertz TokaMac FX. Although this may seem unexpected, keep in mind that CPU accelerators have to do a lot of tricky work at the system level in order to interact properly with the Macintosh's SCSI subsystem and with network overhead. Because, as we have clearly seen, drive speed is such an important part of a server's speed, SCSI shenanigans can result in slowdowns for the disk-intensive tasks performed by a file server.

The results for the Quadra 950 were very similar to those for the IIfx. Replacing the Quadra's 230-megabyte drive with the Hammer 1000FMF drive improved file-transfer times significantly. Adding DayStar's FastCache card, regardless of

which drive was used, either had a negligible positive benefit or actually increased file-transfer times.

### The Verdict

Although it may seem reasonable to assume that rushing out and buying the fastest Mac you can find is the best way to upgrade your AppleShare server, it ain't necessarily so. Upgrading a relatively slow CPU, such as a IIsi, with a fast 1-gigabyte drive can get you server speed that matches that of a Quadra 950 as it comes out of the box from Apple. If you're already using a IIfx as a server, the boost you'll get from jumping up to a Quadra 950 is probably not worth the money; instead, get the fastest hard drive you can afford. It's also clear that for Macs as fast or faster than a IIfx, adding an accelerator is as likely to slow AppleShare down as it is to speed it up.

However, if you're looking for the best server and not just upgrading a current setup, investigate one of the new AppleShare Workgroup Servers. If Apple's claims are true, they'll compete with the big boys. 

Henry Bortman is *MacUser's* technical director. Julie Baher, a ZD Labs project leader, managed the testing for this report.

### The Bottom Line

When compared with other file-server software, AppleShare is notoriously slow, which is one of the main reasons many corporate customers are abandoning it for the likes of Novell NetWare, Banyan VINES, Microsoft LAN Server, and other Intel- or UNIX-based servers popular among PC users. Although there's no way you can speed up AppleShare to compete head-to-head with these other servers, you can optimize your AppleShare file-server system if you apply your upgrade investments wisely. You can also waste a lot of money on upgrades that don't help much.

First, upgrade your network. If you are running AppleShare over LocalTalk, your network is the most likely bottleneck in your setup. One quick way to discover if your network is slowing you down is to note how long it takes to transfer a large file to your server at a time when your network isn't busy — after everyone in your office has gone home for the evening, for example. Then note how long it takes to perform the same transfer during a busy workday — if it takes significantly longer, investigate Ethernet.

Second, upgrade your server's hard drive. Adding a fast

hard drive to a Mac IIsi AppleShare server enables it to match the performance of a stock Quadra 950 as shipped from Apple with a 230-megabyte drive. Adding a faster hard drive to a faster machine such as a IIfx or a Quadra enables it to achieve maximum performance.

Add a powerful 68040-based accelerator? Maybe — and then again, maybe not. We found that adding an accelerator to a IIfx or faster server Mac had little positive effect and that, in some cases, it had a negative effect. Adding an accelerator to a IIsi — if it already has a fast-hard-drive upgrade — enables it to outperform a stock Quadra 950 by between 20 and 35 percent.

Buy a faster CPU? It should surprise no one that faster CPUs result in better AppleShare speed. However, you're better off buying a fast hard drive for a slower server Mac than replacing the slow Mac with a faster Mac that doesn't have a hard-drive upgrade. And it's worth noting that, except under the heaviest load condition we tested (50 test nodes), the difference between the performance of a IIfx and a Quadra 950 was hardly noticeable.



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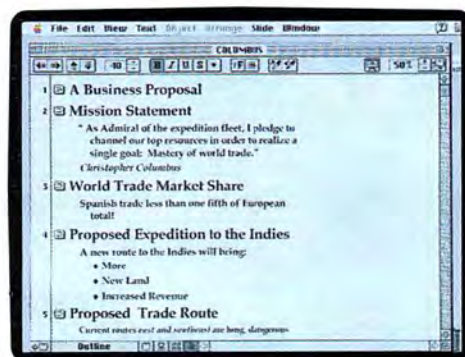
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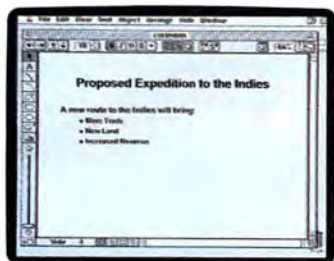
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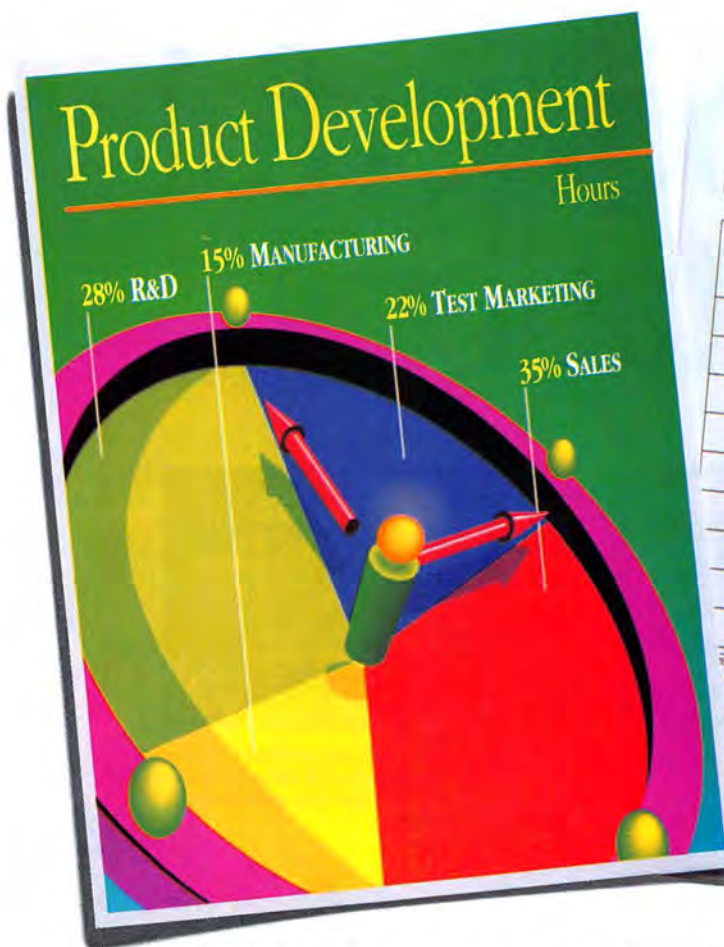
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# Kodak RFS 2035 Scanner

**This scanner's speed and easy-to-use software help you meet the tightest deadlines.**

**K**odak's new RFS 2035 Film Scanner should ease the deadline anxiety of desktop publishers. The Kodak RFS 2035 scans 35mm film — positive or negative, mounted or strip — fast. In fact, it's more than five times as fast as the Nikon LS-3510AF, the fastest scanner in our November '92 slide-scanner report, "Sliding into High Gear: Desktop Slide Scanners" (Buyer's Guide page 46). The secret behind the RFS 2035's high speed is its 1,500-x-1,024-pixel CCD (charge-coupled device) *area array*, which enables the scanner to capture full-frame images as large as 4.6 megabytes without having to move its CCD element across the image. (The one-dimensional *linear arrays* found in most scanners build an image by moving across it, capturing one strip at a time.) With a maximum resolution of 3,072 x 2,048 pixels, the RFS 2035 enables you to enlarge a 35mm full-frame image to letter size on output with a 133-line screen.

The scanner offers auto-focus and automatic color balancing and exposure control, but we had to manually



Figure 1: The Kodak RFS 2035 Film Scanner is not only the fastest transparency scanner we've ever tested but it also boasts very good image quality.

adjust the brightness and contrast to get the best possible scan of our difficult test image (see Figure 2).

The RFS 2035's closest competitor, the Nikon LS-3510AF, also features speedy, automatic scanning. But the Kodak scanner is faster, easier to use, and a few thousand dollars cheaper. The Nikon LS-3510AF captures 12 bits per color

per pixel, for better color fidelity and the ability to pull more detail out of the shadows than the 10-bit Kodak RFS 2035 can. However, unless your work demands high-quality printing, the Kodak scanner's quality should be more than sufficient. If you're trying to keep up with those deadlines, the RFS 2035 will deliver.

— Bruce Fraser

Figure 2: Showing Off



Figure 2: The Kodak RFS 2035's software features automatic color balancing and exposure control, and its default setting provides excellent color fidelity and contrast.

Table 1: Pros and Cons

Kodak RFS 2035 Film Scanner	
★★★★	
List price	\$7,995
Street price	\$7,000
Pros	Fast. Includes Adobe Photoshop plug-in. Easy-to-use software. Easy installation.
Cons	Shadow detail is limited.
Company	Eastman Kodak 343 State St. Rochester, NY 14650 800-242-2424 716-724-6888 716-724-9829 (fax)

PHOTOGRAPHY: GIAMPIERO BENVENUTI



This month's slide scanner is more than five times as fast as the speediest scanner in our November '92 report.





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Step 2: Notice how incredibly easy Now Up-to-Date is to use. Totally customizable. 100% non-fascist. Just click on a date, enter your info, bang, you're done.

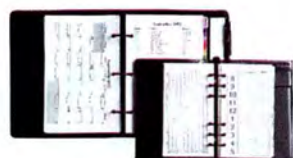
Step 3: Think to yourself, "Wow, calendar software that's actually faster and easier than the old pen and appointment book approach. Amazing."



Step 4: If you are on a network, share events from



*Now Up-to-Date lets you schedule appointments and To Do's instantly—just click on the date you want and then enter your information.*



*Calendars can be printed in all major appointment book sizes and formats, in a wide variety of views and styles. You can even print out wall charts.*

your calendar with the other folks on your network. In return, they'll no doubt share meeting dates and whatnot with you. Not on a network? No sweat, Now Up-to-Date still works fine all by itself.

Step 5: Fly to Zimbabwe and bring up your calendar on your PowerBook. Good. Now change everything. Perfect. Now connect to your office via modem. Presto! All your calendars automatically update themselves.

Step 6: Pick up Now Up-to-Date 2.0. Or, for more info, call us at 1-800-237-3611.

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**elegant and spare** — strands of spaghetti entwined sinuously around a fork's tines, for example. The four collections include animal sketches, background textures, playful '50s pictures, and more. 713-523-5177. \$79 to \$99.

**Plug-o-rama:** Now that we're living in a modular world, it's tough tracking all the new software plug-ins that extend the capabilities of QuarkXPress, Aldus PageMaker, and Adobe Photoshop, for instance. Here are a few of the more interesting ones: **SXetch Pad**, from DataStream Imaging Systems (606-255-6686), lets you create illustrations, generate multicolored blends, convert type to outlines, bind text to a path, and more — all from within QuarkXPress. \$229. **INposition** (\$1,750), from DK&A (619-488-8118), is a page-imposition XTension for arranging QuarkXPress pages for printing, thus eliminating the need for manual stripping. It automatically adjusts for binding technique, paper thickness and creep, and so forth. ♦ Precision placement in

Aldus PageMaker is a snap with SmartAlign and SuperSnap, from Zephyr Design (206-324-0292). **SmartAlign** quickly aligns and evenly spaces text and graphics with a few mouse clicks. **SuperSnap**

offers more options for snapping objects to rulers, custom grids, and other objects and adds free nudging. \$89 each or \$129 for both. ♦ For a faster

route to editing TIFF files in Adobe Photoshop, check out **FASTedit/TIFF** (\$239), from Total Integration. You pull up a preview image and select an area for editing, and when you've finished monkeying with it, the final image instantly updates. 708-776-2377.

**Trendsetting type:** The Font Bureau makes **cutting-edge fonts**, such as Bodega Sans, used in McDonald's ad campaigns and the *Father of the Bride* film remake. Designer Greg Thompson recently expanded the Bodega font family with Bodega Serif and added new weights and small caps. Sold through FontHaus (800-942-9110 or 203-846-3087) or FontShop (800-363-6687 or 416-593-7272). Call for pricing.

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**Freebie:** Anyone who sends files to service bureaus should get a copy of *Computer Ready Electronic Files*, a guide to **proper file preparation** published by the Scitex Graphic Arts Users Association. It covers fonts, formats, styles, colors — you name it. And it's free. 800-858-0489 or 615-366-1798. ☐



By Pamela Pfiffner



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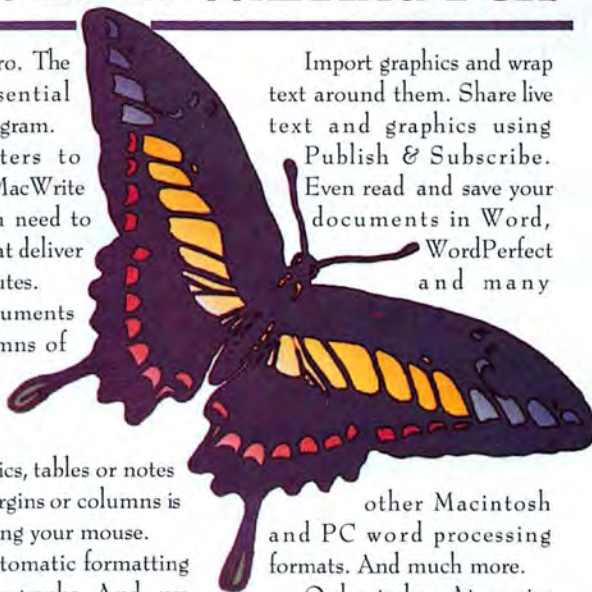
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# The Keys to Photoshop



*Want to unlock the hidden power of Adobe Photoshop?  
Expert Kai Krause reveals the tips and tricks of the pros  
so you too can become a Photoshop master.*

**By Kai Krause**

Adobe Photoshop is perhaps the most powerful and versatile software package on the market today, but its depth and complexity have kept many users from taking full advantage of its features. The recently released Photoshop 2.5 sports an interface that is somewhat easier to use, but some folks still launch Photoshop only when they need to view complex color files or convert files from one format to another. Photoshop isn't really that intimidating, though, once you know some of the basics. That's why we enlisted Photoshop expert Kai Krause to help you unravel the mysteries of this premier image-editing program.

Kai's been helping people tap the power of Photoshop for some time now. His Photoshop forum, where he regularly posts tips and tricks, is one of America Online's most popular forums. A specialist in sound and visual effects and an accomplished programmer, Kai has also developed his own Photoshop plug-in filters. Now he will be sharing his expertise in the pages of MacUser.

In this issue, he covers some basics of system configuration and essential tools, but in the future, he'll tackle such topics as how to master Photoshop's channel operations. So if you've ever witnessed Photoshop wizardry and wondered if you could perform the magic yourself, read on.

**W**hen asked, "How did you *do* that?" many designers and graphics professionals reply, "I could tell you, but afterward I'd have to shoot you!" Then they smile. The human tendency to cling to secrets may date back as far as the Druids, but there's a drawback to secrecy. A while ago, I developed a great method of creating embossed-relief effects. I used it on CD-cover and logo designs and thought it was the cat's meow. Then one week, Photoshop's Emboss filter came around, and suddenly anyone could perform my trick with the click of a mouse.

The moral of the story? If you sit on your secret too long, someone may make a single button out of it. Ever since that happened to me, I've been sharing my insights with other Photoshop users. That's what this column will be: the crystallization of my experience and an open bag of tricks.

For starters, let's lay some ground rules.

## Get a Real Copy

Here's a simple piece of advice for those who've acquired software in a dubious way: Spring for a real copy. It's illegal to copy software — you know that — but there are better reasons to buy it than simply to avoid being thrown in the clink. It pays to get the upgrades — such as the newly released Photoshop 2.5 — and to have the manual (which is really very good, if somewhat shy of insight). Even the plastic-coated overview card that comes with Photoshop is handy. So please



follow this line of software ethics: Support manufacturers and programmers by buying the software.

Now for some Photoshop fundamentals. These are basic factoids some of you may be familiar with, but stay tuned: One new Photoshop tip or trick is worth its weight in magazine ink.

### Optimize Your Mac Setup

If your Mac isn't set up to match Photoshop's requirements, you may not be using Photoshop as effectively as you could be. Here are a few things you can do to avoid being slowed down by a factor of 2 or 3 — or more:

- Photoshop's virtual memory does not like to coexist with Apple's virtual memory, so go to your Memory control panel and turn off virtual memory (see Figure 1).

- Photoshop really wants the cache-size setting (also in the Memory control panel) to be minimal: Make it 32K.

- While you're at it, turn on 32-bit addressing if you're using System 7 — which you should be to run Photoshop at its best.

- When it comes to RAM, Photoshop requires two to three times as much memory as the size of the image you're working on. For example, when you're opening a 3-megabyte file, you should have 6 to 10 megabytes of RAM allocated. If you have only 5 megabytes allocated, Photoshop will still work but will have to use virtual memory, which means your disk must pretend to be RAM, and it's slower than the real thing. Go to Get Info in the Finder, and give as much RAM as you can to Photoshop, leaving 2 to 4 megabytes for the system and dedicating the rest to the program. For example, on a 64-megabyte machine, give Photoshop 60 megabytes.

When you start Photoshop, you need to designate a scratch disk — the hard disk on which the virtual-memory scratch file resides. As a rule, you should appoint your fastest hard drive's disk as the scratch disk (which you designate in Virtual Memory, under Preferences, on the File menu). An absolute no-no is to use a removable medium, such as a SyQuest or optical cartridge, as your scratch disk.

**TIP** To monitor the available space on your scratch disk, try this tip: In the Finder, create a new folder (I call mine "Show size") and change the view to "by Icon." Then open your Control Panels folder, and under Views there, check

"Show disk info in header." Now open the empty folder. You'll see that the upper right-hand corner shows in megabytes how much space is available. Simply drag the open folder just outside the lower left corner of your open Photoshop window: You'll have a continuous read-out of available disk space, and you'll be able to tell when virtual memory starts eating away at it (see Figure 2). Photoshop 2.5 uses a different virtual-memory method from that of the previous version, but the tips above still apply.

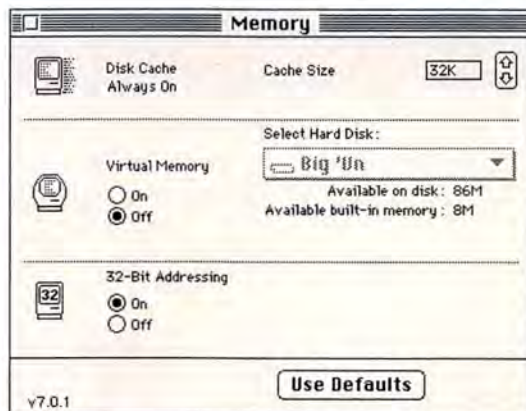
**TIP** The scratch file created by Photoshop's virtual memory can fill up your scratch disk pretty fast. Simply by saving a file in Photoshop's native format, you can free up space by forcing Photoshop to defragment, or rearrange, the scratch file. You can initiate defragmentation at any time without closing the file you're working on. Here's how:

Just create a new image (it can be a mere 10-x-10-pixel gray-scale image), and save it as a Photoshop file. I routinely keep open such a file (which I call Z) and save it every once in a while. (Just click on its window, and save the file). It's almost as easy as if there were a Defragment command.

**TIP** To minimize disk fragmentation, you can also create a partition on your hard disk that's meant for nothing but scratch operations.

### Zoom, Ratio, and Size

Open Photoshop. Confusion sets in right off the bat when you make a new image: On a 640-x-480-pixel monitor (the 13-inch monitor found on 75 percent of all Macs), the 512-x-512-pixel default image won't fit, so Photoshop has to open it in a reduced size that's a quarter of the original size.



**Figure 1:** Photoshop is picky about its memory requirements. For optimum performance, set your Memory control panel with the variables shown here.



**Figure 2:** Photoshop can devour hard-disk space. To keep track of available disk space, create an empty folder and turn on "Show disk info in header," under Views in the Control Panels folder. Position the open folder just outside your Photoshop window for constant feedback about your hard disk, especially when virtual memory is on.



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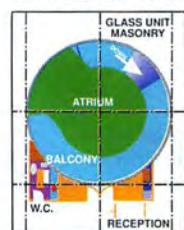
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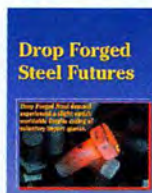
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FROM THE MAKERS OF AFTER DARK

# STAR TREK

THE SCREEN SAVER

Captains Log: Stardate 1992



On our mission to prevent phosphor burn-in...



...we found ourselves surrounded by Klingons!



I asked Mr. Spock and Dr. McCoy for a full diagnosis.

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The same thing happens if you open any image larger than your screen. Although this automatic reduction helps when you need to see the big picture, some people don't understand how it works or what their options are in terms of image size.

The bottom line is that you should use the various Zoom options to *view* the image in different sizes—for example, to work on a small detail or to see a huge picture at a smaller view. But if you want to *change* the actual size and resolution of your image, you need to use Image Size, on the Image menu.

**Zoom and Ratio.** Let's look at some tips for zooming first:

- The title bar (or if you're in full-screen mode, the name at the bottom of the Window menu) shows the size of the image, expressed as a ratio. Normal is 1:1; any other ratio indicates that you are zoomed in or out.

**TIP** To zoom in or out quickly, use Command-plus (+) or Command-minus (-), respectively. (Tiplet: You can perform these operations without holding down the Shift key, so Command-equal sign (=) is just as effective as Command-plus for zooming in.)

- Zooming with the zoom tool (the magnifying glass on your tool palette) keeps the window size constant; zooming by using the Command-key combinations resizes the window to its maximum or minimum size.

**TIP** Use Command-minus four times or more to create a thumbnail of your work. You can then create a full-sized copy of that thumbnail, using Duplicate (under Calculate, on the Image menu), and continue your work, using the full-sized copy. If you want to revert to your previously saved image, just click on its

thumbnail. This way, you can keep several alternatives in view without cluttering up your window.

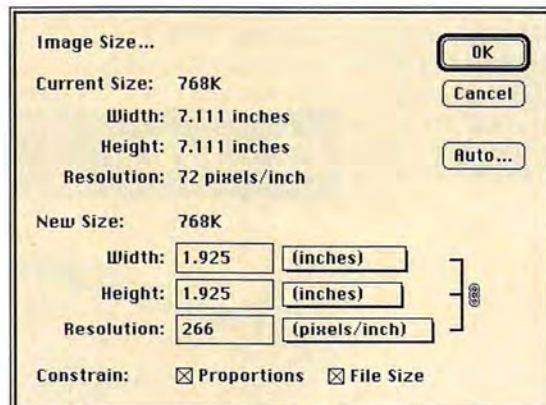
**TIP** Don't forget that you can zoom in on a specific area: If you use the zoom tool to click on an area of a rectangle and drag it, for example, when you release the mouse button, that region will appear at the nearest integer of magnification and at the largest window size possible. Remember that double-clicking on the zoom-tool icon resets the current window to a 1:1 ratio. To zoom in while you have another tool selected, press Command-space. To zoom out, press Command-Option-space.

- Remember the window-size options at the bottom of the tool palette. I recommend choosing the middle option, which maximizes your window size and leaves only the window and menu bar visible on-screen. The surrounding space is replaced by single-bit medium gray, which hides the desktop as well as giving you a small speed increase. (To periodically check your scratch-disk space, just click on the standard-window view.)

**TIP** You can change this setting for individual images; Photoshop remembers the window status for each image separately.

**TIP** Option-clicking on the title bar forces any window to the back, without deselecting it. This is a very fast way to shuffle images. If you have many thumbnails in a pile, consider staggering them.

**TIP** To work on a small detail area, say an eye in a portrait, make a clone of the window (use New Window, on the Window menu). Now use the zoom tool to zoom in on one of these windows, so you can see the full face in one window and the eye alone in the other. Changes you make in one window (such as those



**Figure 3:** To learn about the relationship between image size and resolution, lock your file size in the Image Size dialog box, which you reach from the Image menu, and then experiment with different values in the New Size boxes. You'll see that when the resolution goes up, the image size goes down.



with paint tools or filters) are reflected in both windows simultaneously.

**Image Size.** To change the size and resolution of an image, you need to understand how to use Photoshop's resizing functions. Read up on this in the manual, and make sure you understand the implications of Bicubic versus Bilinear interpolation (which you set under General Preferences). There are trade-offs between speed and accuracy, depending on which interpolation you choose: In a nutshell, Bicubic is more accurate whereas Bilinear is faster. When you have to make an image smaller (also known as sampling down), you lose information. Similarly, when you make an image larger, you add filler to the image. It's important, then, that you set your image size and resolution correctly.

**TIP** In the Image Size dialog box, set the units to inches and check Constrain Proportions and Constrain File Size to lock those attributes (see Figure 3). Try out different sizes and resolutions to see how they are interrelated. (By the way, changing Canvas Size, on the Image menu, doesn't touch either size or resolution; it merely changes the amount of space around your image.)

**TIP** To avoid the problems that can arise in resizing images, work in reverse: Decide on your final goal, and let the dominoes fall backward to determine what size in inches and what resolution in dots per inch you need. For example, if the image is to be an on-screen slideshow PICT image, its resolution will be 72 dpi, no matter what. If it's to be printed to a laser printer, a high-end inkjet printer, or a film recorder, use the highest resolution your schedule and disk-space restrictions allow.

If your final output is going to be produced on a printing press, consult with your print professional about line screen on output. The rule of thumb is to set your resolution to twice that of the final lpi (lines per inch) setting. For example, for printing at 133 lpi, the resolution of your Photoshop image should be

at least 266 dpi. I recommend setting resolution in multiples of 72 dpi, such as 144, 216, and 288, because these settings minimize artifacts caused by image scaling. Think in terms of a checkerboard: It's easy to double it in size but much trickier to enlarge it by 96 percent on a fixed grid. This is the approach Photoshop takes in its Precision Bitmap Alignment (4% reduction) option, found in the Page Setup dialog box, which forces laser printers to print at 288 dpi instead of the normal 300 dpi.

**TIP** Because full-page, high-resolution Photoshop images can quickly balloon to 30 megabytes or more, each step will be painfully slow — especially if your RAM is limited. For optimum speed and ease, the best trick is to work in low resolution for initial sketches and then in medium resolution for most of the session, resizing up to the final resolution only when you are very close to the end of your general sketching and positioning work. Then, at that full resolution, add a few touches: highlights, fine details, sharper edges (add a crisp reflection to an eye or insert a tiny new font, for example). Performing this final touch-up at full resolution gives you an image that looks for all intents and purposes as if it were created entirely at high resolution, and it saves many, many hours.

Another approach is to consider each image element separately and decide on its individual resolution requirements. A background texture can hold up at surprisingly low resolutions, whereas headline type needs to be so sharp and clean that you're better off typing it when you use your page-layout program during page composition.

#### Tools, Keys, and Shortcuts

To step up from casual user to serious Photoshopper, you need to know what each tool does and the finer points of how they're related and you need to be able to recite this information on command at 4 o'clock in the morning (a real

**For optimum speed and ease, work in low resolution for initial sketches and in medium resolution for the rest of the session. When you're close to the end, resize to your final resolution for touching up. You'll save many, many hours.**

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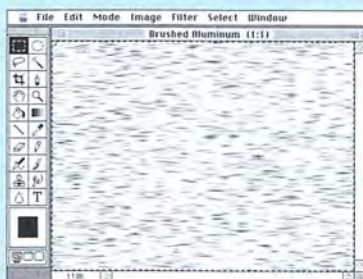
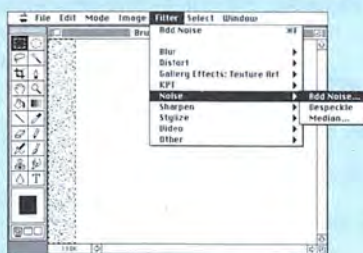
## DESKTOP PUBLISHING TECHNIQUES

Photoshopenhauer would still be up at 4 A.M.). Here are some notes:

Your most basic Photoshop tool is the marquee tool (the rectangular tool in the upper left corner of the tool palette).

Because most of the other tools leave a mark or initiate an action — often when you don't intend them to — always select the marquee tool as your default. (Double-clicking on the marquee tool

### A Quick Metallic Effect



**Figure A:** Create textures quickly by applying the Add Noise filter to a selected area and then stretching it. For a brushed-aluminum effect, set Amount to 99 and Distribution to Gaussian and then scale the rectangular selection horizontally (under Effects, on the Image menu).

To get you started with your Photoshop experimentation, here's an extremely fast way to create textures and backgrounds with the look of brushed aluminum. It's a great way to get your feet wet exploring filters and other Photoshop functions. You can generate this texture at any size; the numbers given here are only examples.

1. Create a new 400-x-300-pixel window in gray scale at 72 dpi.

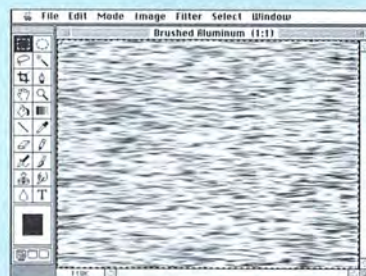
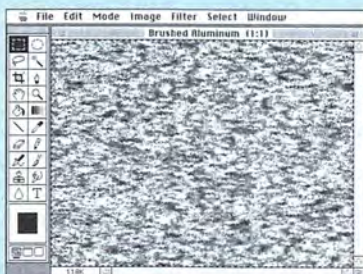
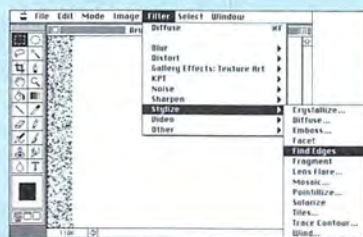
2. Use the marquee tool to select a rectangle on the far-left side of the window, full height, from 15 to 20 pixels wide.

3. Open Add Noise (under Noise, on the Filter menu). For Amount, enter 99; for Distribution, choose Gaussian. The 15-x-300-pixel rectangle should be filled with noise.

4. Under Effects, on the Image menu, choose Scale, which adds little handles to the still-selected marquee rectangle.

5. Click on the lower right handle, and drag it all the way to the lower right corner of your window. (Pressing Shift constrains the movement, but that's not critical here.) On releasing the mouse button, you should have a rectangle filled with instant brushed-aluminum texture (see Figure A).

The theory behind this little trick is that the noise pixels in various shades of gray were stretched when scaled and are now smooth, anti-aliased strips with metallic transitions. This effect is influenced by several variables: the number of noise pixels; the



**Figure B:** Explore Photoshop's filters to apply a variety of effects to the brushed-aluminum texture. Diffuse and Find Edges, used singly or in combination, yield quite different results, depending on whether you apply the filters before you stretch the selection (above) or after (left).



opens an Options dialog box, but you rarely need to use it.) Familiarize yourself with the marquee tool's functions for addition to and subtraction from selected areas and for intersection of

multiple selections. They may seem dry on paper, but these functions are very, very practical.

As you draw a rectangular marquee, think of it this way:

shape and shades of those pixels; and the width of your original rectangle, before and after stretching.

Try the following variations:

After filling the source rectangle with noise, go to Blur, on the Filter menu; click on Blur More; and then proceed with steps 4 and 5 described above. A much softer transition between the bands results — often more pleasing but not as metallic. Many other filters affect the texture, either before or after the stretch. Check out Find Edges and Diffuse, under the Stylize filter, for example (see Figure B).

The Levels controls and others under Adjust, on the Image menu, can also affect the final texture. In the Levels dialog box, moving the lower left triangle (under Output Levels) toward the right defines how black the dark portions are and moving the lower right triangle toward the left defines how white the light portions are.

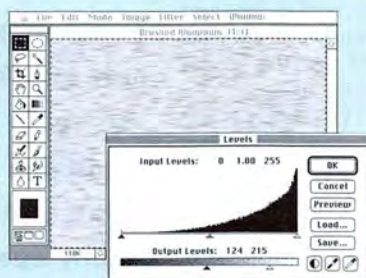
Using just these two controls, you can compress the tonal range, thus softening the texture (see Figure C). Because you're very likely to superimpose type or other elements on the texture, this capability will come in handy. Moving the Input Levels triangles directly under the histogram in the Levels dialog box gives you even further control over your texture's contrast (see Figure D).

**TIP** Click on the Levels title bar to quickly compare the before and after state of your Levels settings. This often-overlooked feature of Photoshop works for many dialog boxes that affect pixel brightness, saturation, and so on.

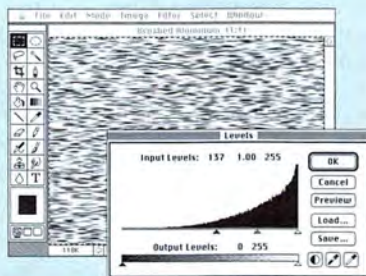
**TIP** You can reverse the position of the two Output Levels triangles, so that the white triangle is on the far left and the black one on the far right. This gives you exactly the same effect as does Invert (under Map, on the Image menu), with the added twist that you achieve it while you're still working in Levels (see Figure E).

Applied vertically, this entire sequence of tips — in other words, creating a thin, 400-x-15-pixel marquee selection across the top of your window; adding noise; and then stretching it downward — can create realistic curtain folds.

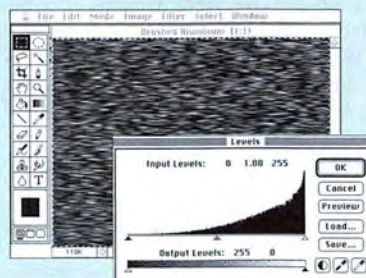
As always, in the process of trying these variations, you may come across numerous interesting mutations and evolutionary sidelines. Save intermediate steps often, and use Duplicate to proceed with a copy.



**Figure C:** To create a subtler texture, try moving the Output Levels triangles (in the Levels dialog box, under Adjust, on the Image menu). Here, we narrowed the contrast by moving the black and white triangles closer together.

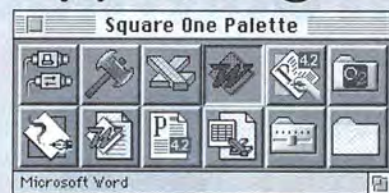


**Figure D:** Moving the Input Levels triangles affects contrast. Here we upped the shadows by moving the black triangle to the right. As a background, this texture might overwhelm some type.

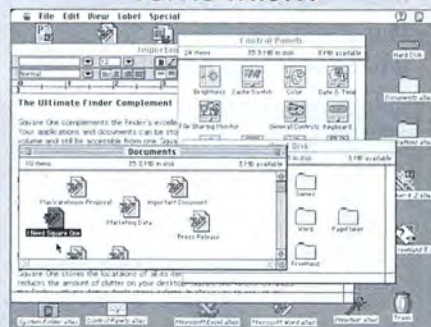


**Figure E:** By reversing the position of the Output Levels indicators (now the white triangle is on the left and the black is on the right), you can invert an image for an unusual effect.

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• Hold down the Command key to have a second selection eat away chunks of a first selection.

• Hold down the Shift key to add to the area of the first selection.

• Hold down both the Shift and the Command keys, and drag a new second selection to create an intersection (an area common to both the first and the second selection).

Photoshop has lots of other useful keyboard shortcuts as well. You get different results when you use modifier keys such as Shift and Option *after* you begin to drag a selection area from those you do when you use them *before* you begin to drag. Shift *before* means adding to a selection; Shift *after* lets

you drag a proportional area — a true square or a true circle, for example. Pressing the Option key after you've begun to drag changes the selection's point of origin from the corner to the center of the selection. You can use all these keys together too: Try Command-Shift-Drag-Shift-Option to get an intersection-true-square-from-the-center selection. Cool!

**TIP** Press Command-H to hide the selection edges — known in Photoshop as "marching ants" — which very often get in the way. I recommend hiding them before you enter dialog boxes such as Levels and Hue/Saturation (under Adjust, on the Image menu), so you can really judge what happens near the selection's edges.

When the cursor enters a floating selection, it changes from an arrow pointing left to an arrow pointing right. Now you can do the following:

- Move the selection area away, leaving behind the background color.
- Hold down the Option key to move a copy of the selection area.
- Hold down the Shift key to constrain your dragging to true vertical, true horizontal, and 45-degree angles.
- Hold down Shift and Option together to drag a copy in a straight horizontal line.

**TIP** To clean up a messy edge, find

a clean chunk of it elsewhere in your image, select that area with the marquee tool, Option-drag that area away, and position clean copies of it where needed.

**TIP** To add to your bag of tricks for manipulating parts of images, make macros for Flip Vertical (I use Control-↑), Flip Horizontal (Control-→), Rotate 90 Degrees Clockwise (Control-↓), and Rotate 90 Degrees Counterclockwise (Control-←). I even added Control-space as an alternative to Command-H for Hide Edges, in order to give myself better left-hand control.

**Photoshop still allows only one level of Undo, so get in the habit of undoing often. This way, you can try out many operations and quickly revert to your original. Be adventurous during the creation phase.**

I highly recommend CE Software's QuickKeys as a companion to Photoshop, by the way. Many opera-

tions take on a whole new flavor when they're truly just a keystroke away. Consider making macros of such step-intensive operations as Duplicate (under Calculate, on the Image menu).

The main keyboard shortcut to be aware of, obviously, is Undo, or Command-Z. Alas, Photoshop still allows only one level of Undo, so get in the habit of undoing often. This way, you can try out many operations and quickly revert to your original, which allows you to be more adventurous during the creation phase.

In general, try out variations — probe the boundaries. The little gems you'll uncover are very much worth finding. The big gems, such as the entire world of channel-calculation modes, are even more rewarding: We'll be looking at them in a future article. In the meantime, visit the large Photoshop forum I run with Photoshop codeveloper John Knoll on America Online, in the Macintosh Graphics Arts area. Look under the keyword KPT for the Kai's Photoshop Tips section, where you'll find 21 (and counting) chapters of documentation free for the downloading. 📎

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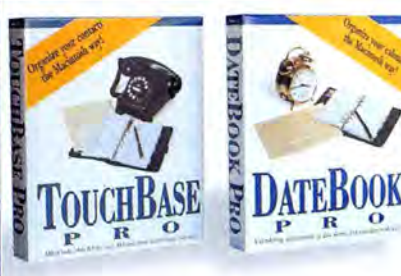
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## DAILY BUSINESS ACCOUNTING, DATABASES, SPREADSHEETS, WORD PROCESSING

- ★ **Aatrix Software ... 30 day MBG**
- 8914 PayCheck.. 49. 8079 Hi! Finance... 79.
- Abacus Concepts**
- 7106 StatView 4.0 ..... 439.
- ★ **ACI US ... 30 day MBG**
- 5618 4th Dimension 3.0 ..... 575.
- ★ **Advanced Software ... 30 day MBG**
- 8051 InTouch 2.0 55. 9049 DocuComp II 99.
- ★ **After Hours Software ... 30 day MBG**
- 11558 TOUCHBASE PRO 3.0 ..... 49.
- 11557 DATEBOOK PRO 2.0..... 49.
- 11559 TOUCHBASE PRO/DATEBOOK PRO Bun. 89.
- Amaze, Inc.**
- 3582 The Far Side Daily Planner 2.0 ..... 39.
- ★ **Attain Corporation ... 60 day MBG**
- 8465 IN CONTROL 2.0 ..... 85.
- 11545 IN CONTROL 2.0/Dynodex Bundle..... 99.
- ★ **Avery ... 60 day MBG**
- 7446 MacLabel Pro 1.5 ..... 48.
- ★ **Banner Blue ... 30 day MBG**
- 3548 Org Plus For Macintosh 1.0..... 125.
- ★ **Baseline Publishing ... 30 day MBG**
- 8881 Thunder 7 1.5.2 ..... 55.



★ **CheckMark Software ... 60 day MBG**  
5863 MultiLedger 3.0—Easy-to-use, integrated accounting software selected as a *Macworld Editors' Choice (11/92)*..... \$225.  
5862 Payroll 5.0—Complete payroll management which also works with M.Y.O.B.. 169.

- Broderbund Software**
- 3608 MacUSA ... 29. 3356 MacGlobe..... 34.
- ★ **CheckMark Software ... 60 day MBG**
- 5863 MultiLedger 3.0 ..... 225.
- 5862 Payroll 5.0 ..... 169.
- Chena Software**
- 1594 Fair Witness 1.2 ..... 185.
- ★ **Claris ... 30 day MBG**
- 3903 ClarisWorks 2.0. 199. 11472 Upgrade 99.
- 3836 FileMaker Pro 2.0 268. 4752 Upgrade. 89.
- 1745 MacProject Pro.. 399. 3531 Resolve 169.
- 11202 MacWrite Pro 169. 11475 Upgrade 69.
- Contact Software**
- 7636 ACT! 249. 10317 ACT! Comp. Upgrd. 91.
- ★ **Dow Jones ... 30 day MBG**
- 1942 Market Analyzer Plus 2.04 ..... 225.
- ★ **Helix Technologies ... 30 day MBG**
- 1077 Helix Express ..... 299.
- ★ **Inspiration Software ... 30 day MBG**
- 11269 Inspiration 4.0 ..... 159.
- ★ **Intuit ... 30 day MBG**
- 2507 Quicken 3.0 ..... 42.
- ★ **Lotus Development ... 60 day MBG**
- 11580 Special: 1-2-3 Mac & DeltaGraph Pro Bundle (not available to resellers)..... 149.
- ★ **MECA ... 60 day MBG**
- 2796 Managing Your Money 5.0 ..... 32.
- ★ **Microlytics ... 60 day MBG**
- 7820 Random House Encyclopedia 1.0 ..... 68.



★ **Lotus/DeltaPoint ... 60 day MBG**  
11580 1-2-3 for Mac 1.1/DeltaGraph Pro Bundle—Get Lotus' easy-to-use, full-featured spreadsheet, and DeltaPoint's comprehensive, flexible charting and presentations package, both for one great price! While supplies last..... \$149.



### NEW VERSION!

★ **ACI US ... 30 day MBG**  
5618 4th Dimension 3.0—4D is a relational database that is fast, powerful, easy to learn, and easy to use. It incorporates a powerful relational database engine with a complete application designer ..... \$575.



# and throw it away



★ **Inspiration Software ... 30 day MBG**  
11269 *Inspiration 4.0*—Easiest way to brainstorm, diagram & write! Offers powerful diagrams & presentation visuals to transform concepts into stories, proposals & reports. Clearly communicate even complex info ..... **\$159.**

★ **Microsoft ... 30 day MBG**  
2884 *Works 3.0*... 155. 8173 *Upgrade* ..... 79.  
3669 *Excel 4.0*... 295. 5237 *Upgrade* ..... 125.  
4902 *Word 5.1*... 295. 1503 *Upgrade* ..... 125.  
5454 *The Microsoft Office 3.0* ..... 475.

★ **Niles & Associates ... 30 day MBG**  
4602 *EndNote 1.5.1* 85. 8010 *Plus 1.2.1* 142.

**Nisus Software**

11189 *Nisus Limited Flag Edition 3.4* ..... 239.

★ **Nolo Press ... 30 day MBG**

4228 *Personal RecordKeeper 3.0* ..... 29.

2981 *WillMaker 4.0* 35. 1204 *Living Trust* 43.

★ **Now Software ... 30 day MBG**

1793 *Now Up-To-Date 65. 2366 (10 pack)* 519.

★ **Palo Alto Software ... 60 day MBG**

6975 *Business Plan Toolkit 4.0* ..... 75.

11199 *Sales & Market Forecasting Toolkit* ..... 75.

★ **Pastel Development ... 30 day MBG**

1785 *DayMaker 2.0* ..... 79.

★ **Peachtree ... 60 day MBG**

9584 *Acct. for Mac* 119. 9588 *Insight Acct.* 299.



★ **Palo Alto Software ... 60 day MBG**  
6975 *Business Plan Toolkit 4.0*—Make custom plans with preprogrammed spreadsheets & text guide.  
11199 *Sales & Market Forecasting Toolkit*—Predict sales & understand the process.... **\$75.**  
Each—4½ Mice MacUser (8/92).

★ **Personal Training Sys. ... 60 day MBG**  
*Training for System 7, Excel, Lotus 1-2-3, Persuasion, FileMaker Pro, PageMaker, Illustrator, FreeHand, Word, PowerPoint, MS Office, QuarkXPress & Mac* ... ea. \$49.

★ **Portfolio Systems ... 30 day MBG**  
7992 *DynoPage 2.0* or 6916 *Dynodex* ..... ea. 49.

★ **Power Up ... 30 day MBG**  
7696 *Calendar Creator 1.01* ..... 48.  
7694 *Address Book Plus* ..... 67.  
1760 *PowerRunner Bundle* ..... 95.

★ **ProVUE ... 60 day MBG**  
4582 *Panorama II* 239. 11540 *PowerTeam* 95.

★ **Reality Technologies ... 30 day MBG**  
6929 *WealthBuilder 2.0* ..... 94.

**Round Lake Publishing**  
*LetterWorks, SALES or LEGAL* ..... ea. 45.

**SAS Institute**  
10797 *JMP 2.0* and *DeltaGraph Pro Bundle* .. 599.  
10796 *JMP Design* ..... 259.

★ **Shana Corporation ... 30 day MBG**  
8810 *Informed Manager 99. 7692 Designer* 149.

10832 *Informed Foundation* ..... 299.

★ **Symantec ... 30 day MBG**  
3422 *More 3.1* ..... 265.

★ **SYSTAT ... 30 day MBG**

1230 *FASTAT 2.0* 399. 1231 *SYSTAT* 699.

★ **TechWorks ... 30 day MBG**

7736 *Spiral 1.0* ..... 72.

★ **Teleware ... 30 day MBG**

7616 *M.Y.O.B. 3.0* 109. 10726 *BESTBOOKS* 55.

★ **TIMESLIPS ... 30 day MBG**

1701 *LapTrack*.. 52. 2986 *Timeslips III* .. 194.

★ **Vertical Solutions ... 60 day MBG**

5886 *FastLabel*.. 55. 3235 *MacLabelPak*.. 85.

★ **WordPerfect ... 60 day MBG**

3800 *WordPerfect 2.1.3* 289. 4711 *Upgrd* 75.

10773 *WordPerfect Works 1.2* ..... 149.

★ **Wordstar ... 30 day MBG**

6984 *Correct Grammar 3.01* ..... 49.

10277 *The Correct Bundle (4 programs)* ..... 99.

## GRAPHICS & DESIGN PUBLISHING, PRESENTATIONS

★ **Abracadata, Ltd. ... 30 day MBG**  
9990 *Design Your Own Home - Architecture*,  
9992 *Interiors* or 9994 *Landscape*... ea. 48.

**Adobe Systems**  
10167 *Adobe Dimensions 93. 5001 Streamline* 119.

10289 *SuperATM* ..... 89. 10423 *Upgrade* .. 49.

6053 *Plus Pack 2.0* 118. 6098 *TypeAlign* 61.

4145 *Adobe Premiere* 429. 3199 *Upgrade*.. 149.

8171 *Adobe Illustrator 3.2 (w/Dimensions)* .. 368.

6644 *Photoshop* ..... 548.

**AGFA**

7971 *AgfaType CD-ROM* ..... 69.

★ **Aldus ... 30 day MBG**

6674 *Aldus Personal Press 2.0* ..... 99.

2461 *Aldus Gallery Effects 1.01* ..... 128.

10176 *Fetch* ..... 199. 7541 *IntelliDraw* ..... 194.

3506 *SuperPaint 135. 4751 Persuasion* ..... 325.

1330 *FreeHand 394. 11548 PageMaker 5.0* 579.

**Altsys**

1983 *EPS Exchange* 89. 1195 *Fontographer* 258.

★ **Apple Computer ... 30 day MBG**

3008 *Apple Font Pack* ..... 74.

★ **Ares Software ... 30 day MBG**

8878 *FontMonger 1.5* ..... 93.

**Broderbund Software**

3572 *Kid Pix 1.2*.. 34. 7293 *Companion* ..... 23.



★ **Attain Corporation ... 60 day MBG**  
8465 *IN CONTROL*—1992 *MacUser* Editors' Choice Award for *Best Organizational Tool*. The new standard. The only product to manage activities as outlines, prioritized lists, and calendars!..... **\$85.**

1427 *Print Shop*... 35. 6281 *TypeStyler 2.1* 126.

★ **Clarix ... 30 day MBG**

2518 *MacDraw Pro* 275. 8007 *Clarix CAD* 599.

★ **Clarix Clear Choice ... 30 day MBG**

11203 *Brushstrokes* 95. 11473 *Comp. Upgrd* .. 75.

★ **DeltaPoint ... 60 day MBG**

11580 *Special: Lotus 1-2-3 Mac & DeltaGraph Pro Bundle (not available to resellers)* ..... 149.

★ **Deneba Software ... 30 day MBG**

11055 *artWORKS 99. 3227 Canvas 3.0.4* 259.

★ **Expert Software ... 30 day MBG**

4870 *Expert Color Paint, 1737 Landscape*,  
8619 *Home*, or 1731 *Office Design* ea. 29.

**Fractal Design**

1068 *Sketcher 1.0* ..... 93.

10402 *Painter 2.0* ..... 265.

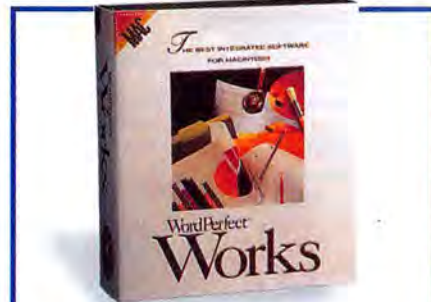
**Gryphon**

4202 *Morph 1.1* ..... 95.

★ **Letraset ... 30 day MBG**

*Letraset FonTek Library - Full line avail. call*

4709 *LetraStudio*.. 139. 6300 *FontStudio*.. 359.



★ **WordPerfect ... 60 day MBG**  
10773 *WordPerfect Works 1.2*—Includes word processing, database, spreadsheet, charting, drawing and painting, and communications software, all seamlessly integrated into one powerful program ..... **\$149.**



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## ★TechWorks ... 30 day MBG

7736 *Spiral 1.0*—Create documents with meeting & engineering notes, text from e-mail & more. Enter text, add pages, create sections, tabs, bookmarks, print, save, insert graphics, calculate equations & much more. Loads into RAM. **\$72.**

- Light Source**  
11059 Ofoto 2.0..... 275.  
★**Lingulst's Software ... 60 day MBG**  
2569 Cyrillic II.. 99. 2641 Laser Hebrew ... 89.  
**Macromedia**  
7651 Action! Mac 349. 7441 SwivelPro... 479.  
3450 SwivelMan. 596. 7653 MacroModel 999.  
★**Manhattan Graphics ... 30 day MBG**  
4990 Ready, Set, Go! 6.0 (May '93)..... 219.  
★**Microsoft ... 30 day MBG**  
2878 PowerPoint 3.0 295. 10065 Upgrade 125.  
2565 Project 3.0..... 445. Upgrades ..... call  
**Postcraft International**  
2210 Effects Specialist 2.0..... 89.  
**Quark**  
7612 QuarkXPress 3.1 ..... 549.  
**Queue, Inc.**  
11185 Toucan Press ..... 49.  
★**Specular International ... 30 day MBG**  
4962 Infini-D 2.5..... 699.  
★**Strata ... 30 day MBG**  
7773 StrataVision 3D ..... 599.  
**Strategic Mapping**  
10767 LOCAL EXPERT ..... 82.  
★**Synergy Software ... 30 day MBG**  
6617 KaleidaGraph 3.0 ..... 149.  
★**Timeworks ... 30 day MBG**  
7115 Publish It! Easy w/Print-It! limited supply... 109.  
11196 Publish It! Easy & Color-It limited supply 199.



## Fractal Design

10402 *Painter 2.0*—Turns your computer into an expressive fine-arts tool. Whether it is texture, color, or renowned Artists' Technique (e.g. Van Gogh), this program can accommodate your needs..... **\$265.**

- ★**T/Maker ... 30 day MBG**  
ClickArt (bitmapped).. 34. or (EPS). \$55.  
★**Virtus Corporation ... 30 day MBG**  
4488 WalkThrough 1.1.3 ..... 309.

## PROGRAMMING UTILITIES, HYPERCARD, SECURITY

- ★**Abbott Systems ... 30 day MBG**  
2515 Calc+ 1.0.. 36. 5236 CanOpener 2.0 59.  
★**Aladdin Sytems ... 30 day MBG**  
7410 StuffIt SpaceSaver 34. 6740 Deluxe 65.  
★**ALSOFT ... 30 day MBG**  
9808 MasterJuggler 25. 9807 DiskExpress II 45.  
★**Alysis Software ... 30 day MBG**  
2687 SuperDisk! 66. 1608 More Disk Space 56.  
★**Apple Computer ... 30 day MBG**  
1206 At Ease 44. 7072 QuickTime Starter Kit 105.  
1074 System 7.1... 79. 3413 MultiPack.... 369.  
★**Atticus Software ... 60 day MBG**  
9120 Super 7 Utilities ..... 64.  
★**Berkeley Systems ... 30 day MBG**  
5737 After Dark 2.0x ..... 28.  
2198 More After Dark.. 23. 2196 Bundle.. 39.  
3392 Star Trek: The Screen Saver..... 34.  
★**Casa Blanca Works ... 30 day MBG**  
1593 Drive 7 2.3 ..... 49.



★**Central Point Software ... 30 day MBG**  
5041 *MacTools 2.0*—1992 MacUser's Editors' Choice Award Finalist for Best Protection Program. New Version offers auto backup, data recovery & virus protection. MacWEEK, Macworld & MacUser claim it a blockbuster product.. **\$105.**

- ★**CE Software ... 60 day MBG**  
1727 CalendarMaker 39. 8024 QuickKeys<sup>2</sup> 89.  
★**Central Point ... 30 day MBG**  
10595 Safe & Sound 1.0 37. 5041 MacTools 105.  
★**Claris Clear Choice ... 30 day MBG**  
11205 Retrieve It!..... 60.  
★**Connectix ... 30 day MBG**  
8441 CPU..... 49. 10765 Virtual 3.0..... 49.  
10764 CPU/Virtual 3.0 Bundle ..... 59.  
**Coral Research**  
7310 TimeLog..... 62. 7309 (10 Pack)..... 399.  
★**Dantz Development ... 30 day MBG**  
9115 DiskFit Direct 1.0... 29. 3393 Pro ... 72.  
5255 Retrospect 147. 7945 Remote 2.0 264.  
★**DataWatch ... 30 day MBG**  
4803 Virex/Mac or 8561 911 Utilities..... 62.  
**Delta Tao Software**  
10755 WonderPrint ..... 36.  
★**Fifth Generation ... 30 day MBG**  
4287 PYRO! 4.01 27. 3955 Suitcase 2.1.2. 53.  
7404 DiskDoublor 52. 4838 AutoDoublor ... 58.  
10398 CopyDoublor 39. 7704 Public Utilities.. 98.  
**FWB, Inc.**  
2999 Hard Disk ToolKit 125. 7929 Personal 49.  
★**Harvard Systems Corp. ... 30 day MBG**  
11193 Kai's Powertools for Photoshop ..... 89.



## Teknosys

5203 *Help!*—Configuration problem solver improves Mac's efficiency and prevents crashes. Artificial intelligence detects conflicts, incompatibilities, improperly installed files, damaged and duplicated files, etc..... **\$88.**

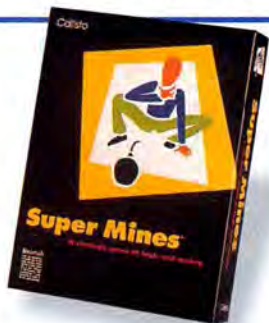
- ★**Inline Design ... 30 day MBG**  
1744 Icon 7..... 31. 9843 Inline Sync 1.0 .. 79.  
7068 INITPicker.. 49. 2913 Redux 1.63..... 49.  
10731 PBTools 62. 10976 PBTools Bundle 92.  
**Insignia Solutions**  
7552 RapidTrak ..... 58.  
★**Kent Marsh Ltd. ... 30 day MBG**  
9513 FolderBolt 71. 1839 NightWatch II ..... 89.  
10498 FolderBolt/NightWatch II Bundle ..... 129.  
★**Leader Technologies ... 30 day MBG**  
10272 PowerMerge 1.0 ..... 79.  
★**Logical Solutions ... 30 day MBG**  
10169 7th Heaven 2.5 67. 11191 Chameleon 39.  
★**MAXA Corporation ... 30 day MBG**  
11248 Alert! 115. 10772 Snooper (software) 129.  
10771 Snooper 2.0 Hardware & Software Kit 179.  
**MicroMat Computer Systems**  
3732 MacEKG II 2.0.6 ..... 89.  
★**Nine to Five Software ... 30 day MBG**  
2020 9 to 5 Office 19. 9767 Reports 2.5 125.  
★**No Hands Software ... 30 day MBG**  
11195 Magnet 85. 11194 Common Ground 122.  
★**Now Software ... 30 day MBG**  
6925 Now Utilities 4.0... 84. 8471 (10) ... 775.  
★**Palomar Software ... 30 day MBG**  
8210 PLOTTERgeist 2.1 ..... 249.  
★**SNA, Inc. ... 30 day MBG**  
10594 Offline 3.82 ..... 62.  
**Stac Electronics**  
11568 Stacker for Mac ..... 96.  
★**Symantec ... 30 day MBG**  
5176 SAM 3.5 64. 6748 Norton Utilities 2.0 95.  
9957 THINK Ref 2.0.. 89. 2688 THINK C. 199.  
**Teknosys**  
5203 Help!..... 88.  
★**TGS Systems ... 60 day MBG**  
6667 Prograph 2.5.2 ..... 299.  
★**Thought I Could ... 30 day MBG**  
4843 Wallpaper 37. 10839 More Wallpaper 25.  
**UserLand Software**  
4753 Frontier 2.0 ..... 185.

## LEARN & PLAY FOREIGN LANGUAGES, TRAINING, GAMES

- ★**Abbott Systems ... 30 day MBG**  
9578 Kaleidoscope 1.0..... 25.  
**ActiVision**  
1039 Shanghai II ..... 29.  
1134 Lost Treasures Vol. I 40. 2470 Vol. II 29.  
★**AMTEX Corporation ... 30 day MBG**  
2517 TRISTAN Pinball ..... 33.  
★**Baseline Publishing ... 30 day MBG**  
7785 Talking Moose 4.0.2 ..... 22.



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## ★ Callisto ... 30 day MBG

11369 *Super Mines*—Challenge your mind with the ultimate minefield game! If you've enjoyed playing *Minesweeper*, *Mines* or *Bombs*, you'll be amazed and confounded by *Super Mines*. 100 levels, extra lives, promotions..... **\$29.**

## Broderbund Software

9059 Arthur's Teacher Trouble..... 41.  
Carmen Sandiego Series (CP)..... ea. 29.  
8285 Where/World Carmen Sandiego Deluxe 47.

## Buena Vista Software

1711 Heaven and Earth ..... 34.

## ★ Callisto ... 30 day MBG

11369 *Super Mines* ..... 29.

## ★ Carina ... 30 day MBG

7761 *Voyager II*, the Dynamic Sky Simulator.. 99.

## ★ Centron Software ... 30 day MBG

5910 *Crossword Creator* 39. 8524 *Casino Master* 45.

## Changeling Software

11188 *Pax Imperia* ..... 35.

## Colorado Spectrum

2554 *Mouse Yoke (aircraft yoke adapter)* ..... 29.

## ★ Davidson & Associates ... 30 day MBG

10953 *Kid Pictures* 19. 3922 *Talking Spell It +* 28.

2574 *MathBlaster Plus* or 7942 *Kid Works 2.* 34.

## Delta Tao Software

2536 *Spaceward Ho!* or 2439 *Strategic Conq.* 36.



**\$280  
VALUE!**

## ★ Inline Design ... 30 day MBG

10976 *PBTtools Bundle*—Includes *PBTtools*, the battery tracking and conservation tool; *Inline Sync*, to keep the latest version of files on both your machines; and *Tesserae*, the 1991 *Macworld* Best Brain Game ..... **\$92.**

## EARTHQUEST

8050 *EARTHQUEST* or 3118 *Ecology 1.0* .... \$34.

## ★ Edmark Corporation ... 30 day MBG

7155 *Kid Desk* 24. 7318 *Millie's Math House* 29.

## Electronic Arts

1907 *PGA Golf* 39. 2805 *Tournament Course* 18.

## ★ Expert Software ... 30 day MBG

6219 *Expert Astronomer 1.0* ..... 29.

## Graphic Simulations

8083 *Missions at Leyte Gulf (req. Hellcats)*.... 20.

4756 *Hellcats Over the Pacific 1.0.3* ..... 38.

## ★ Great Wave ... 30 day MBG

6693 *KidsMath 2.0* or 2276 *Kid's Time* .... ea. 25.

8527 *NumberMaze* or 3471 *DaisyQuest.* ea. 35.

## ★ HyperGlot Software ... 30 day MBG

(French, German, Italian & Spanish)

*Word Torture* ea. 32. *Tense Tutor.* ea. 38.

*Pronunciation Tutor*

(Span., Fren.) ea. 32. (Germ., Chin.) ea. 38.

## ★ Inline Design ... 30 day MBG

1562 *3 in Three.* 31. 7652 *Cogito* ..... 37.

7646 *Tinies* or 7650 *S.C.OUT* ..... ea. 37.

## Interplay Productions

1894 *BattleChess* .. 29. 1893 *CheckMate.* 31.

10935 *Out Of This World* ..... 34.

## ★ Learning Company ... 30 day MBG

2670 *Reader Rabbit 3.0 (CP) (ages 4-7)* ..... 34.

9570 *Reader Rabbit 2 1.0 (ages 5-8)* ..... 34.

3281 *The Writing Center 1.0* ..... 51.

## ★ Leister Productions ... 30 day MBG

7126 *Reunion 3.0* ..... 115.

## ★ Maxis ... 30 day MBG

11272 *SimAnt* or 11273 *SimCity Supreme* ea. 35.

11270 *SimLife.* 39. 11271 *A-Train.* 39.

## ★ MECC ... 30 day MBG

3960 *Number* or 3959 *Word Munchers.* ea. 18.

3963 *Oregon Trail 1.1* ..... 28.

## ★ Microlytics ... 60 day MBG

7871 *Berlitz Interpreter* ..... 34.

## ★ Microsoft ... 30 day MBG

2868 *Flight Simulator 4.0 (CP)* ..... 42.

## ★ Nordic Software ... 30 day MBG

8257 *Preschool Pak* 34. 7470 *Jungle Quest* 30.

## ★ Penton Overseas ... 30 day MBG

*VocabuLearn/ce Levels I & II (Span., Fren.,*

*Germ., Ital., Rus., Japan., & Heb.)* ... ea. 35.

*VocabuLearn/ce Level III (Span., Fren.,*

*Germ., Ital., Rus., & Japan.)* ..... ea. 35.

## Pluma, Inc.

8695 *Capitalist Pig* ..... 34.

## Psygnosis

11562 *Lemmings* ..... 35.

## Quantum Leap Tech.

11457 *Aesopolis* ..... 49.

## ★ Que Software ... 30 day MBG

9743 *Typing Tutor V* ..... 29.

## Sierra On-Line

11098 *Crosswords.* 20. 7396 *Red Baron* .. 39.

## Software Toolworks

4619 *Mavis Beacon Typing 2.0 (CP)* ..... 29.

## ★ Spectrum Holobyte ... 30 day MBG

3464 *Tetris* ..... 22. 3017 *Wordtris 1.0.* 28.

4835 *Super Tetris* 28. 9113 *Falcon Color.* 39.

## ★ Strategic Studies ... 30 day MBG

3287 *Warlords (empires at war)* ..... 34.

## StudyWare

*ACT, GMAT, GRE or SAT Prep* ..... ea. 29.

## ★ Toyogo ... 30 day MBG

7624 *NEMESIS Go Master* 35. 7623 *Deluxe* 99.

## Velocity

11538 *Spectre Supreme* 40. 11537 *LAN 2-Pak* 52.



## ★ MAXA Corporation ... 30 day MBG

10771 *Snooper 2.0 Hardware & Software Kit*—Over 250 diagnostic tests. Includes performance benchmarks, emergency disk & more! .. **\$179.**  
11248 *Alert!*—Desktop Diagnostic software that finds software conflicts and fixes them! ... **115.**

## Warner New Media

11008 *Desert Storm* 27. 11007 *Word Tales* 39.

11015 *View from Earth* ..... 54.

## VIDEO AND SOUND MONITORS, MUSIC, ANIMATION

## Articulate Systems

7007 *Voice Record* 56. 2034 *Voice Impact* 79.

*Voice Navigator SW (Head/Desk Mike)* ea. 319.

*Voice Navigator II (Head/Desk Mike)* ea. 469.

## Coda Music Software

8188 *MusicProse 2.1* 189. 5604 *Finale* 549.

## Envisio

4106 *Quick-16* ..... 399.

## Macromedia

5486 *Sound Edit PRO.* 199. 7651 *Action!* .. 349.

4598 *MacRecorder Sound System PRO* ..... 239.

5087 *MacroMind Director* 799. 2246 *3-D* 999.

## NEC

4252 *MultiSync 3FGx* ..... 689.



## Articulate Systems, Inc.

*Voice Navigator SW*—Voice Recognition Software for all sound capable Macs ..... **\$319.**

*Voice Navigator II*—Voice Recognition Hardware & Software for all Macs ..... **469.**

Both incl. Headset Mike or Desktop Mike.



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## MicroMat Computer Systems

3732 MacEKG II 2.0.6—1992 MacUser's Editors' Choice Award Finalist for Best Protection Program. Provides in-depth knowledge on what makes your Mac tick. Able to isolate/diagnose intermittent failures..... \$89.

- Nova Development**
- 11101 Kaboom!..... 27.
- ★ **Nutmeg Systems ... 30 day MBG**
- 15" Monochrome System for the II, LC, SE/30, si and SE..... ea. 519.
- Passport Designs**
- 10362 Passport Producer 299. 8250 Encore 379.
- Radiis**
- 1738 PrecisionColor Pivot (reqs. interface).. 999.
- 7870 Rocket 33..... 2199.
- RasterOps**
- 8944 RasterOps 24STV..... 799.
- 11258 Editing Aces Suite/Digital Video Solution 3399.
- Sigma Designs**
- 6944 Power Portrait (platinum)..... 679.
- Software Toolworks**
- 5201 The Miracle (piano teacher)..... 349.
- Sony**
- 10530 14" Multiscan Trinitron Monitor..... 689.
- 10529 17" Multiscan Trinitron Monitor..... 1149.
- Sound Source**
- Star Trek: Original TV Vol. 1 or 2... ea. 30.
- Star Trek: Next Gener. Vol. 1 or 2... ea. 35.
- 1759 AudioClips: 2001 A Space Odyssey..... 35.
- ★ **SuperMac/E-Machines ... 30 day MBG**
- 4122 VideoSpigot LC 255. 4164 (for NuBus) 379.
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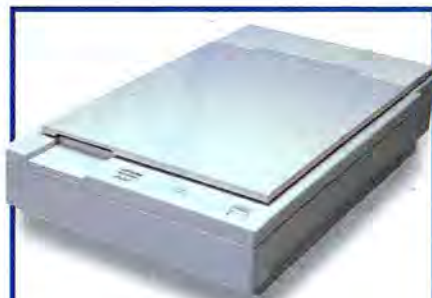
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# BRIDGES

**Meeting across the platforms:** If you take meetings with folks who take their windows with a capital W, scheduling can be tough. But take heart:



ON Technology (617-876-0900) has announced Meeting Maker XP, a cross-platform version of the company's group-scheduling

software. The Mac and Windows user interfaces are as **close to twinlike** as possible. And, unlike with Meeting Maker 1.5, users can access their schedules without having to be connected to the server. Don't expect to schedule beyond your workgroup, though — the first version of Meeting Maker XP, which supports only a single Mac or Intel server (plus clients of either type), doesn't allow server-to-server connections. \$695 for 5 users; \$1,195 for 10; \$5,595 for 50.

**Hubby material:** When the file server's on Ethernet but you're stuck on LocalTalk, Ethernet's much-vaunted speediness may seem about as believable as the stuff people say in Personals ads. To **renew your faith**, the folks at Tribe have come out with a new hub called the TribeStar. It combines eight ports' worth of LocalTalk packet-switching hub technology with a single Ethernet port, so it can handle as many as eight simultaneous LocalTalk-to-Ethernet file transfers. \$1,795. 510-547-7800.



◆ If your Ethernet is **way too busy**, check out the AsantéBridge 1012, which is now built in to the 12-port 10BASE-T AsantéHub 1012. The bridge's CPU is a SPARClite RISC chip, which Asanté says is fast enough to handle a very high Ethernet

load without bogging down. \$1,999 for the bridge module; \$3,099 for the hub-and-bridge combo. 800-662-9686 or 408-435-8388.

**Stylin' dial-in:** Can your dial-in server support Mac, PC, and UNIX users *and* throw in WAN routing to boot? Telebit's NetBlazer PN packs all this power into **one modem-sized box** with connectors for all three flavors of Ethernet, an RS-232 port for WAN connections, and either a second RS-232 (the NetBlazer PN1, \$2,299) or an RJ-11 jack for a built-in V.32bis modem (the PN2, \$2,699). It also works as a dial-in server for AppleTalk Remote Access, SLIP, PPP, and IPX connections. 800-



835-3248 or 408-734-4333. ◆ Speaking of ARA servers, Cayman's GatorLink finally supports dial-back! Version 1.1 of the GatorLink software, available with new GatorLinks or as a \$99 upgrade, also allows per-user connection-time limits and provides enhanced support for the SecurID authentication system. 617-494-1999.

**"Built-in" Ethernet gets cheaper:** Now that a few printers and six Mac models come with AAUI

Ethernet ports built in, prices are dropping for adapters, the **handy gizmos** that transmit the signals from those ports over your wiring scheme of choice. Formerly priced at around \$130 to \$150, the following AAUI adapters are now at \$99: Apple's thinnet and thicknet

AAUI adapters; AAUI TwP for 10BASE-T and AAUI TnT for thinnet, from Sonic Systems (408-736-1900); and FriendlyNet AAUI adapters, from Asanté. Sonic's AAUI Combo, which has both connector types on the same adapter, costs \$129. ☞

**By Stephan Somogyi**





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**CIRCLE 192 ON READER SERVICE CARD.**



# The Mac Does Windows



*It's a Mac! It's Windows! It's two, two,  
two graphical user interfaces in one!*

**By John Rizzo**

**R**emember the game software that could bring up a fake spreadsheet screen with a keystroke, just in case the boss walked by? With more and more people using Macs in PC-dominant offices, the following scenario might be more realistic:

"Let's see, I'll just put this in my Apple Menu Items folder and . . . uh oh, the boss! Better switch to Windows!"

"Hello there, Jenkins, playing solitaire again? Heh, heh. That Windows is something else, eh? Say, is that some kind of nonapproved clone you're using there?"

"Of course not, J. R. Everything works exactly the way it should. I'll just switch to the File Manager here, open up our custom accounting software, a simple Alt-Control-F7-W, and — voilà! — we're in data-entry mode."

"Good work, Jenkins. Carry on."

How did Jenkins pull this off with a Mac? No, not by using dummy screens or by remotely controlling a PC with Timbuktu for Windows (see "Windows in a Mac World," March '93, page 197) but by actually running Microsoft Windows. You can accomplish this platform-boggling feat by using either Insignia's SoftPC with Windows or Orange Micro's OrangePC, recent versions of two products that have been putting DOS onto Macs for several years. Both products have been redesigned to improve their speed, which is necessary given the demands Windows makes on DOS. In addition, both now directly support VGA graphics, the standard in the PC world.

Although they serve the same purpose, SoftPC and the OrangePC take opposite approaches to the problem of running software written for an Intel microprocessor on the Mac's Motorola microprocessor. SoftPC is a software product that emulates PC hardware, whereas the OrangePC is mostly hardware — it's almost a complete PC on a NuBus board. Not surprisingly, these differences are reflected in price and speed. SoftPC gives you the lower price you'd expect from a software product (\$499), and the top-of-the-line model of the OrangePC card offers five times the performance of SoftPC — at almost four times the cost (\$1,799).

## PC on Board

The OrangePC board is packed with PC hardware, so it uses few of the Mac's hardware resources. First, there's a none-too-shabby CPU (a 25-megahertz 80486SLC-25 in the top model and an 80386sx-25 in the other two models), with an Intel 80387sx-25 math coprocessor as an option. Another plus: The board's VGA circuitry can pass graphics through the Mac to a standard Mac monitor, so you don't have to plug the monitor in to the card (Orange Micro expects to offer Super VGA sometime this year).

The OrangePC also has its own RAM, sitting in four SIMM slots, and the two higher-end models include a wealth of connectivity items: serial and parallel ports for connecting to printers or other PC peripherals and an AT expansion slot that



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137% wackier, but...**



Along the way, we goofed and built in some useful features too. Like a menu clock (oops!). Like space-saving icons to replace text in the menubar (d'oh!). Like animations to help you find your lost cursors (well,

at least they look cool). Like windows that can be shrunk down to just their titlebars, and expanded again. And of course, our famous scrollbars with dubl-arrows at each end.

**ClickChange is still the fun way to personalize your Macintosh, though.** Replace drab old cursors, desktop patterns, and menu titles with exciting, colorful alternatives. Color schemes accompany your choice of button, window, and scrollbar styles.



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**Hey, MacUser dug it.** ClickChange 1.0 was rated 4.5 mice. **Requires:** a MacPlus or newer, System 6 or 7, and a sense of humor. \$89.95.

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## BRIDGES MAC TO PC

accommodates standard half-sized boards (8- and 16-bit). The expansion slot lets you put an OrangePC-equipped Mac onto any PC network.

### The Softer Sell

SoftPC also comes in three versions for the Mac, but only one of them concerns us here: SoftPC with Windows. The other two, as you might guess from the lack of the W-word in their names, don't do Windows. SoftPC Professional (\$325) runs DOS applications on most Macs. Universal SoftPC (\$165), which requires less memory and runs EGA instead of VGA, is meant to run DOS on low-powered Macs.

Although its other two versions don't have stringent platform requirements, Insignia recommends that you run SoftPC with Windows on a Mac with a 68040 processor, such as the high-end Quadras or midline Centris Macs. You can load SoftPC with Windows on a 68030 Mac, but it's not particularly usable: You spend most of your time watching the screen draw, almost pixel by pixel.

But don't think that SoftPC with Windows is just SoftPC with a high-end platform requirement. Built in to the product are mouse and display drivers fine-tuned for Windows-on-Mac operation.

### Some Similarities

SoftPC with Windows and the OrangePC do have some things in common. Both let you run VGA graphics on the full Mac screen or in a Mac window, although the window in SoftPC with Windows is not resizable. Both have keyboard equivalents for function keys and for the second button on a PC mouse. Both products let you use the Mac's floppy drive as a PC A: drive, and both let you create a Mac file that acts as a PC C: drive and provides a location for storing DOS and Windows on your hard disk. (The OrangePC comes with a 380K utility for creating the C:-drive file.) If you like your C: drive configured differently for different projects or situations, you can create multiple files of this type.

The software memory requirements for both products are small, but keep in mind that Microsoft Windows and Windows applications are memory hogs, so you'll need to stock up on plenty of RAM. I couldn't open a large Excel for Windows spreadsheet with less than 12 megabytes of total RAM for either SoftPC with Windows or the OrangePC. With

the OrangePC, the 12 megabytes came from 4 megabytes on the Macintosh and 8 megabytes on the board itself.

SoftPC has a slight memory advantage over the OrangePC, because it can assign more RAM to Windows applications. Although the OrangePC can make use of as much as 16 megabytes in its own SIMM slots, SoftPC with Windows uses RAM in the Mac SIMM slots, as much as 16 megabytes of extended memory plus 32 megabytes of expanded. However, running one or more applications that require that much RAM slows the application down.

### A Harley and a Bicycle

I tested both products with off-the-shelf Windows applications (such as Excel and Ami Pro) to see how much faster a 486-equipped OrangePC is than SoftPC with Windows. I ran SoftPC on a Quadra 950 and the OrangePC in a Mac IIci, because the board runs at the same speed regardless of which Mac model contains it. The OrangePC is a true multiprocessing product and doesn't use the Mac's CPU. PC programs on your Mac run just as fast in the background as they do in the foreground. In fact, you can install multiple OrangePC cards in a Mac, each running independently.

The speed of SoftPC with Windows, on the other hand, is directly proportional to the speed of the computer it's running on—as you'll understand if you see Insignia's versions of SoftPC for high-speed RISC workstations in action. The processing required for SoftPC with Windows is considerable; the Mac has to process a Windows application on top of the Windows interface on top of DOS on top of the CPU-emulation software on top of the Mac operating system.

As a result, SoftPC with Windows is not for power users. SoftPC took 40 seconds to launch Windows, whereas the OrangePC took 14 seconds. With Windows applications, the OrangePC was four to six times as fast as SoftPC. For instance, the OrangePC took about 5 seconds to recalculate a 2,000-cell Excel for Windows spreadsheet. This is a faster recalculation time than you'd get on many Mac models running the same spreadsheet with the Mac version of Excel. In contrast, SoftPC with Windows took 24 seconds to do the recalculation.

The OrangePC would have scored even better on the Excel tests if I'd added a math coprocessor to the board, and



SoftPC with Windows would have fared worse on a slower Mac. Still, SoftPC is not impossibly slow. There's a delay when you pull down menus and change windows, but it is not long enough to make you want to go get a cup of coffee.

### The Bicycle's Likables

SoftPC with Windows makes up for some of its relative slowness with a smoother and more elegant implementation of Windows. Insignia has included Windows as part of the Mac-like SoftPC installation process, so you can avoid the annoying Microsoft Windows installer, which asks you to select every arcane aspect of your PC's setup. With the OrangePC board, you have to supply your own copy of Windows and use the standard Windows installer.

I also prefer SoftPC with Windows' method of emulating the two-button PC mouse. Although both products designate keyboard equivalents for the right mouse button (the OrangePC uses Command-click, and SoftPC uses the keyboard's = key), only SoftPC lets you move the cursor in Mac as well as PC windows while the PC-mouse emulation is active. With the OrangePC, you can't move the cursor out of the PC window (say, to access the Apple menu) without first pressing Control-M to switch into Mac-mouse mode.

SoftPC with Windows also provides some useful cross-platform integration features that OrangePC lacks. For example, SoftPC lets you designate any Mac volume or folder as an E: drive, so Mac as well as Windows programs can access it — and so you can use the click-and-drag method to move files between Mac and PC environments. And you can share peripherals as well as files: SoftPC maps the PC LPT1 port to the Mac's printer port and COM1 and COM2 to the

Mac's serial ports. The OrangePC, in contrast, can print only to printers connected directly to it.

Last, Insignia's manuals are superior to Orange Micro's. The SoftPC with Windows manual contains 140 pages of tips and techniques, whereas the OrangePC manual is a skimpy 34 pages.

### Which Windows Wins?

Of course, one question remains: Which product was Jenkins using when the boss came by? If Jenkins only occasionally uses Windows to access an application (or to fool the boss) and has a 68040-based Mac, then SoftPC for Windows is the answer. Its features and interface make it a good value. If Jenkins uses Windows applications more than he does Mac applications or if he frequently number-crunches big Windows files, then the OrangePC is the right choice.

"But wait a minute," you may say, "why should anyone buy a PC board for their Mac when they could buy a real PC for the same price or less?" For one thing, the OrangePC is a real PC, and having it in your Mac is a more convenient way to manage your Mac and PC files and data. And compared with RocketShare, Radius' 68040-based Mac-on-a-board, Orange Micro's PC-on-a-board is reasonably priced. Perhaps more important, the last thing most people need is two computers sitting on one desk. It's more work for your company to support two monitors, two boxes, two keyboards, and two mice. And if the company you work for is anything like the one I work for, it's much easier to justify an add-in board for a computer than to justify a second computer for your desk.

**John Rizzo, a MacUser technical editor, is the author of MacUser Guide to Connectivity, published by Ziff-Davis Press.**

**Table 1: Products That Run Windows on Your Mac**

	OrangePC \$\$\$\$	SoftPC with Windows 3.0 \$\$\$\$
List price	\$1,099 with 80386sx-25, \$1,499 with 80386sx-25 and AT bus or ports, \$1,799 with 80486SLC-25	\$499
Company	Orange Micro, Inc. 1400 N. Lakeview Ave. Anaheim, CA 92807 714-779-2772	Insignia Solutions, Inc. 526 Clyde Ave. Mountain View, CA 94043 800-848-7677 415-694-7600

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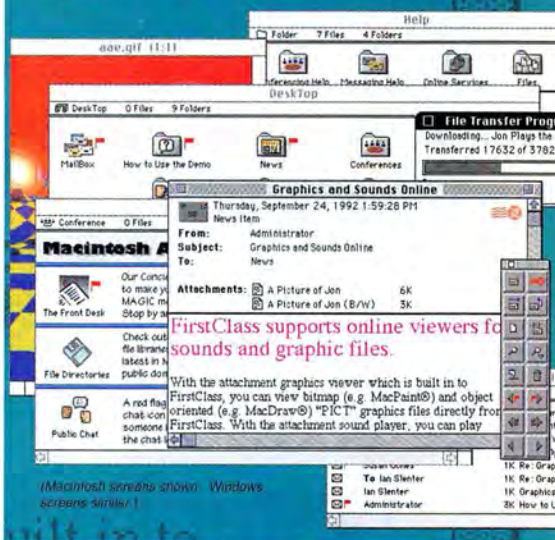
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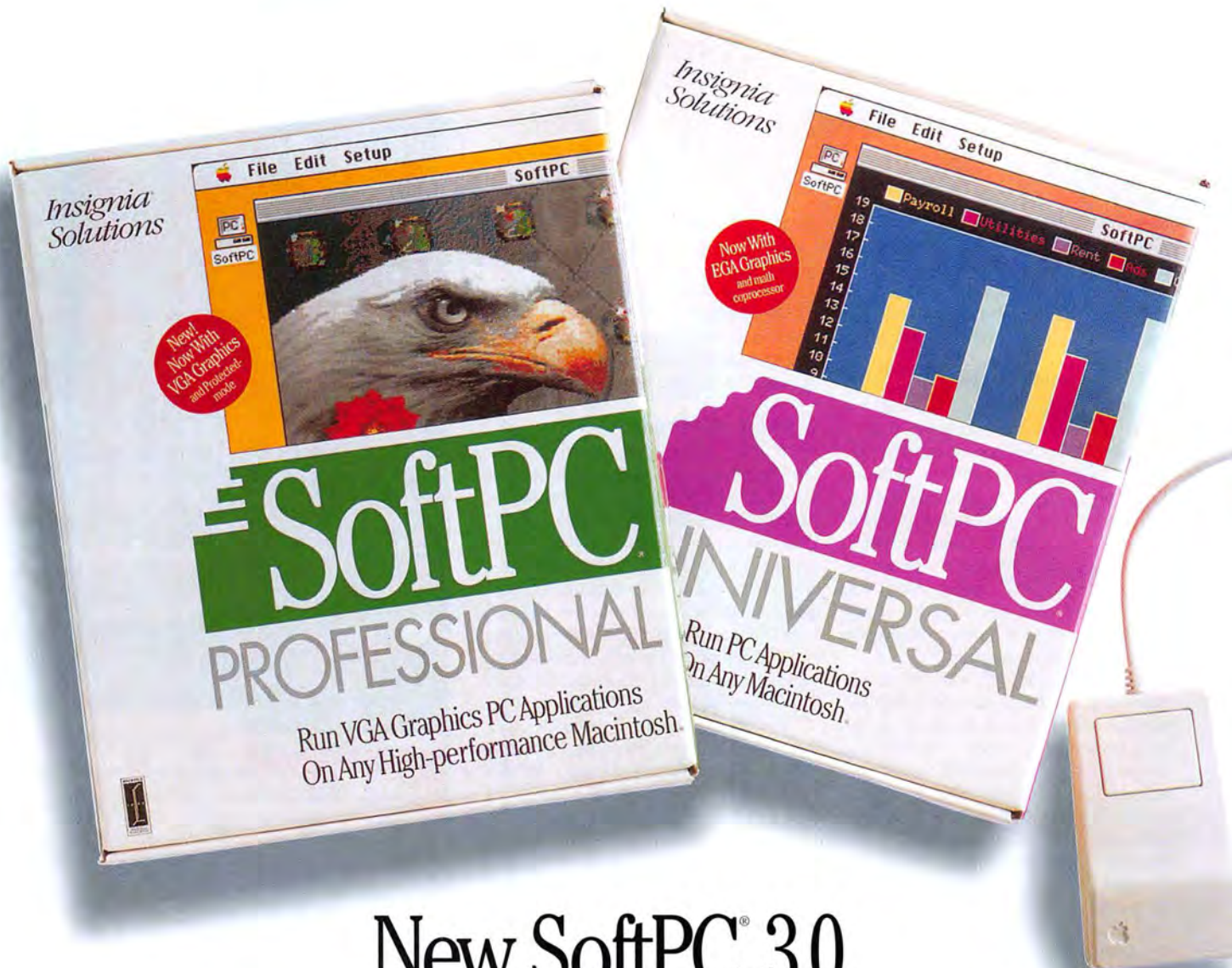
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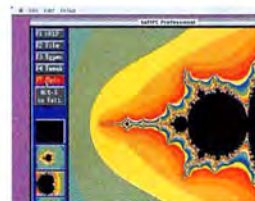
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**CIRCLE 155 ON READER SERVICE CARD.**





# PERSONAL MACINTOSH

**Featured speakers:** Apple says that what makes its new AppleDesign Powered Speakers special is that they're the first ones designed by a computer company specifically for computers. Right, that's why we all listen to stereos designed by Ford specifically for cars. Wait a minute, I *do* listen to a stereo designed by Ford. So, how special are these speakers? They're magnetically shielded, of course, to protect your color monitor from an **instant**

**electronic tie-dye.** But so are self-powered speakers from companies such as Bose, Altec Lansing, and Monster Cable. Like Altec Lansing's speakers, the Apple speakers can play sounds from both the Mac and a second high-fidelity source (such as a CD-ROM drive) at the same time. \* Where Apple scores serious points, though, is in the convenience department: The speakers are relatively light, and you can easily schlepp one with one hand (try that with a Bose speaker). Plus, there's a headphone jack in the front of one speaker. I'd count the headphone jack as Apple's one inspired design innovation. Apple hasn't set a list price for the speakers, but you can

expect to see them for around \$180 a pair. If I had to recommend speakers to someone buying a new CD-ROM drive, I'd say that Apple currently has the most attractive offering — especially if it starts bundling them with its CD-ROM drives. 800-538-9696 or 408-996-1010.

**Good grief:** Want to see what great educational software for kids looks like? Check out Yearn 2 Learn

Peanuts, from Image Smith (800-876-6679 or 310-325-1429). The company's first title, which is designed for children ages three to ten, features Charlie



Brown, **Snoopy**, and the rest of the Peanuts gang. What makes it stand out are good graphics; a broad range of subjects, including math, geography, and reading; multiple levels of difficulty, so more than one kid in a family can find something appropriate; and that it comes on just four high-density floppy disks. Overall,

it's the classiest non-CD-ROM-based educational package I've seen. \$64.95.

**Kerning and trekking:** Admit it, your font collection probably doesn't include **Klingon or Romulan** letterforms. As part of a continuing effort to document every Star Trek/Mac-related product in the universe, let me refer you to Bitstream's first two Li'l Bits Font Packs for the Macintosh (Windows versions of these have been around for a while, probably because Klingons prefer Windows). The Star Trek



Font Pack and the Star Trek: The Next Generation Font Pack each retail for \$19.95. 800-522-3668 or 617-497-6222.

**Just for fun:** Can't decide what to rent at the local video outlet? Having Macworld CD Ventures' Taste Mate CD-ROM is like having the **world's biggest videotape guidebook** with a little artificial intelligence. Based on what you say you like, it recommends movies you might not have seen. A little pricey at \$69.95, but it works. 800-821-1177 or 415-974-7474. ☞



By James Bradbury



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# The Essential Mac Library



*You can't judge a book by its cover — at least not at 20 or 30 bucks a pop. Here are some guaranteed-great titles for beginners and experts alike.*

**By Bob LeVitus**

**G**o into any good-sized bookstore, and chances are, you'll see at least one shelf of Mac books. Some are up-to-date, useful, easy-to-understand, information-packed gems. Others, unfortunately, are either out-of-date or underinformative. A very few just plain stink. So how do you pick the books for your reference library that will help you maximize your Mac investment? The best way is to find someone — like me — who has already read a lot of them.

So stick around for my recommendations of some specific titles to look for in a variety of categories and some sure-fire tips for picking winners yourself.

## Read Her First

Let's start at the beginning, with a book for absolute novices. Say you or someone you know has just brought home a shiny new Mac, maybe a Performa. What's the fastest way to get up to speed? That's easy: Get a copy of *The Little Mac Book*, by Robin Williams (Peachpit Press, 2414 Sixth Street, Berkeley, CA 94710; 800-283-9444 or 510-548-4393; \$16).

There is no better introduction to the Mac than *The Little Mac Book*, now in its third edition. Although it's not as little as it used to be (the first edition was about half the size of the current one), the third edition is the best yet. Williams gently guides novices from turning the thing on for the first time through using it like a veteran. Along the way, she demystifies computer jargon with clear, concise definitions that even the

truly computerphobic can understand and appreciate.

Williams is one of the best and most readable Mac writers around. Her clear-but-witty style encourages, cajoles, scolds, warns, and informs, with a warm, comforting tone that puts even neophyte Mac users at ease. The table of contents, glossary, and index are exemplary, making it simple to find just what you need to know.

Although the manuals that come with Macs have improved tremendously over the years, I usually recommend that new users skip the imposing *Macintosh Reference* and read *The Little Mac Book* instead. You can always go back and look at *Macintosh Reference* if there's something you don't learn in *The Little Mac Book*, but that's unlikely.

Another good book for first-time Mac users is *Macs for Dummies*, by David Pogue (IDG Books, 155 Bovet Road, Suite 610, San Mateo, CA 94402; 800-762-2974 or 415-312-0650; \$16.95). Pogue obviously knows his stuff, and his book covers much of the same ground as *The Little Mac Book*, although many will find Pogue's tone somewhat harsh. Where Williams' gentle guidance makes you feel like she's on your side, Pogue's humor can occasionally be acerbic. Here's an example of their contrasting styles:

Pogue: "If you see the 'AAAAAAGH' icon shown in the following figure, either you've had too many Buds for one afternoon, or you should try moving your Mac away from open flame."



Williams: "The icon you really don't want to see is the Sad Mac. This means there is really something wrong."

So which one of these books should you buy? Each features good information presented clearly, costs about \$16, and is approximately 300 pages long. You won't go wrong with either of them, but I prefer *The Little Mac Book* for its soothing tone, which I think is better suited to average first-time users. Not everyone is average, though, so if you'd rather experience the in-your-face humor of *Macs for Dummies*, then I say, Go for it.

#### **A Biblical Epic**

The next step beyond the introductory books is to turn to the Bible. I mean, of course, *The Macintosh Bible* (Goldstein & Blair/Peachpit Press, \$32). This is actually the granddaddy of all encyclopedia-style Mac books. (A few books preceded it, but in those days there wasn't enough information about Apple's new computer to warrant encyclopedic treatment.) After all these years, the *Bible* remains one of the best single references on using a Mac. I once said in a review of the first edition, "Everyone who owns a Mac should have it." That still applies.

Now in its fourth edition — all 1,200+ pages of it — *The Macintosh Bible* is better than ever. It was even impressive enough for the editors of *MacUser* to nominate it as best information resource in last year's Editors' Choice Awards. Virtually everything gets covered — the basics, storage and memory, software, hardware, printing, fonts, utilities, and troubleshooting — plus it has thousands of tips and hints on topics from Aachen (a font) to Zync (a file-syncing utility). It also features an exhaustive glossary, a thorough listing of products and companies (complete with addresses and phone numbers), and a phenomenal 100+-page index. I find myself referring to *The Macintosh Bible* more than any other book on my bookshelves.

#### **Words and Pictures**

The vast majority of application-specific books are just rehashes of the manuals that accompany the programs — what I call "pirate docs." You need books like these only if you have an illegal copy of the software, and even then their value is questionable. There is, however, a second type of application-specific book. These books enhance your

use of the software by teaching you tips and techniques that are not contained in the official documentation. Here are a few of my favorites:

Marianne Carroll's *Super Desktop*

**For those who haven't  
gotten the hang of  
Microsoft Word yet,  
Marianne Carroll's  
book is the fastest  
way I know to  
get up to speed.**

*Documents* (Brady Publishing, 15 Columbus Circle, New York, NY 10023; 800-428-5331 or 317-573-2500; \$26.95) is a visual step-by-step guide for creating great-looking documents with Microsoft Word 5.0. I consider myself something of a Word wizard, but this is the book I turn to when I need to master a technique quickly and painlessly. The book focuses on tasks such as forms generation; mail-merge; generating reports; using style sheets; formatting tables; linking documents with Excel; producing long documents, envelopes, and lists; and so on. Each technique includes a step-by-step tutorial accompanied by beautifully annotated screen pictures. Although some of this information appears in Microsoft's manuals, Carroll's version is better and more painless. For those who haven't gotten the hang of Word yet, this book is the fastest way I know to get up to speed.

I also use PageMaker a lot. I've typeset eight of my last nine books myself, and I produce a newsletter every month for my daughter's preschool. Although I now know the program backward and forward, two books helped me immeasurably — Robin Williams' *PageMaker: An Easy Desk Reference* (Peachpit Press, \$29.95) and *Real World PageMaker 4: Industrial Strength Techniques*, by Olav Kvern and Stephen Roth, the dynamic duo of page-making software (Bantam Computer Books, 666 Fifth Avenue, New York, NY 10103; 212-765-6500; \$24.95).

Williams' book teaches everything (and I mean *everything*) you need to know to master PageMaker and delivers it in

small, digestible tutorials accompanied by shortcuts and hints. When I work on PageMaker projects, it's Williams' book I keep on my desk, not the Aldus manual.

Kvern and Roth take a more holistic approach, with plenty of theory and planning combined with a generous helping of power-user tips and hints. (The section on how to plan leading grids is alone worth the cover price.)

Unfortunately, both books will become somewhat obsolete with the impending shipment of PageMaker 5. Fortunately, Williams will be updating hers and Kvern and Roth are working on a new book, *PageMaker 5 Tips & Tricks* (this one will be published by Peachpit Press). I expect that both will be as good as or better than their predecessors, given the incredible range of knowledge the authors have shown in their earlier works.

I'm not an artist. Not even close. But on occasion I do need to use graphics programs such as Adobe Photoshop, Adobe Illustrator, and Aldus FreeHand. So any book that can help me tame their often bewildering array of tools, palettes, and dialog boxes is much appreciated. I've found two that shine — *Real World FreeHand 3*, by Olav Kvern (Peachpit Press, \$29.95), and *Design Essentials with Adobe Illustrator and Adobe Photoshop*, by various authors (Adobe Press/Hayden, 177 N. College Avenue, Carmel, IN 46032; 800-428-5331 or 317-573-2500; \$39.95). Kvern's FreeHand book is chock-full of hints and helpful tips for mastering FreeHand, with extensive explanatory screen shots. *Design Essentials* is a series of step-by-step tutorials accompanied by the most-beautiful four-color illustrations you've ever seen. It's expensive but worth every penny. The instructions in each book are easy to understand and yield professional-looking results. If these books can make an artistically impaired oaf like me feel proficient, just imagine what they can do for you.

#### **Shareware**

There's no shortage of book/disk combinations featuring the latest and greatest shareware programs, but the best I've seen so far is the *Mac Shareware 500*, by Ruffin Prevost and Rob Terrell (Ventana Press, P.O. Box 2468, Chapel Hill, NC 27515; 919-942-0220; \$39.95). For each shareware program, the authors give a detailed description and a star rating on a scale of 1 to 5. I found that I agreed, for



the most part, with their assessments. *Mac Shareware 500* seems expensive until you consider that it includes four disks with nearly 3.5 megabytes of the authors' favorite programs plus a free membership for America Online with five hours of usage credit. It's a good deal.

Another shareware book worth looking at is *MacUser Guide to Shareware* (Ziff-Davis Press, 5903 Christie Avenue, Emeryville, CA 94608; 510-601-2099; \$34.95), written by our very own tip-meister Gregory Wasson. Like *Mac Shareware 500*, it includes reviews of hundreds of shareware programs; unlike *Mac Shareware 500*, it includes system requirements and limitations of each product. Wasson's book also has more-detailed reviews; more tips and techniques; and a better, easier-to-read layout. Although the book comes with only one disk, the programs on the disk are all first-rate.

If you're into shareware, you won't go wrong with either of these books.

### Shopping Tips

First and foremost, find a bookstore with a good selection of Mac books. Any bookstore worth its salt will stock at least a few of the titles I've mentioned. If you don't see many Mac titles, find another bookstore.

If you can't find a decent bookstore in your neck of the woods, call some of the publishers mentioned in this column and ask for their current catalog. You may have noticed that Peachpit Press appears frequently. Call there first — Peachpit offers a fine selection of Mac titles.

Assuming you've found a store with a reasonable selection, how do you decide among several similar books? First, look them over. Does the design appeal to you? Read the foreword or preface and something from the middle of the book. Does it make sense? Do you like the author's tone? Now check the index. A good index can mean the difference between a good book and a great one. Try finding a topic by looking it up in the index. If, after performing all these tests,

you still can't decide, it's possible that none of the books you're considering is right for you.

Another excellent idea is to log on to America Online, CompuServe, or GENie, and post a public message asking for recommendations from other Mac users. (For what it's worth, this technique also works beautifully when you're considering a software purchase.) Try to get a dialogue going. When people reply, ask them what they liked best and least about the book they recommended. If you have a specific need, ask if they think this book will be helpful to you.

By the way, it's not worth your while to bother with the on-line shopping area on CompuServe. I spent a few minutes searching for the titles I've discussed here, and it was a complete waste of time. I found four book vendors on-line, but all of them specialized in icky DOS and Windows titles. ☹

When he's not busy writing computer books, Bob LeVitus reads a lot.

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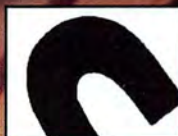
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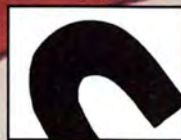


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# It's Super-PIM!



*Tired of wondering where you saved that most current piece of info?  
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**By Henry Bortman**

I'm at the hotel. Thousands of miles from home. I call into the voice-mail system at *MacUser* to pick up my messages. There's a call from Ray O. Sunshine, an Apple product manager. He wants to talk to me about the nasty things I said about the Duo Express Modem in the March issue. He wants to meet a week from Thursday. He leaves his number.

I log the call in my List of Things I Don't Have Time to Do, an In Control document. It's one of four windows I keep open on my PowerBook all the time. Two others are my Directory of All Known People (a Dynodex file) and my Schedule of Unavoidable Obligations (a Now Up-to-Date calendar). I refer to these affectionately as List, Directory, and Schedule.

The windows of these three files, along with the window for QuickMail (my fourth mainstay for staying in touch), are carefully sized and positioned on my PowerBook desktop so that no matter which one I select, a small corner of each of the other three is always visible, a mere mouse-click away. I have also positioned these four windows so that I can see a row of alias icons along the bottom of my desktop. Four are for — guess what — the Four Critical Files. The others are for lesser entities, such as Microsoft Word and Excel. Having these folders visible gives me a second way to access the Four Critical Files, in case my window corners get covered up. I also have a third way, using special QuickKeys, one for each file.

Anyway, I log in Ray's call. My List has columns for name,

company, phone number, notes, and date. I type the relevant information for Ray into it.

When I finish logging all of my other messages, I call Ray back. I get his voice-mail. "I'm sorry, I'm at an off-site meeting until next Monday. If you'd like to make an appointment, please contact my area associate, Terry, at extension 3333." Sounds like a plan. I log Terry's info as a separate entry in my List.

Figuring that I may want to get in touch with Ray and Terry again sometime, I take a moment to diligently reenter their names, company info, titles, and phone numbers into my Directory as well. You just can't have the same information in too many places, I always say. I think of it as a kind of backup.

I call Terry. She answers the phone. We agree on a time for Ray and me to meet, at his office. She gives me directions. I type the time and date of the appointment and the directions to Ray's office into my List (as part of my record of the call).

Then I go to my Schedule. If an appointment doesn't get entered in my Schedule, the odds are good I won't show up. And Ray's already mad at me. Three guesses what I enter into the Schedule. Ray's name, his number, Terry's name, her number, and the directions to Ray's building. I suppose I could have entered only the time of the appointment and whom I was meeting with. But when next Thursday rolls around, I'll be relying on my calendar to tell me to go see Ray and I'll want to have all the information there at my fingertips.



## MOBILE MAC

I've gotten particularly good at driving with one hand while accessing an event in my Schedule with the other. I need more practice to navigate my List and Directory files while cruising down the interstate. Be grateful I don't have a stick shift.

Now I feel secure. I have the same information entered in at least two — maybe three — places. If I'm lucky, I didn't mistype a phone number somewhere along the line. And you wanna know the best part? List, Directory, and Schedule have absolutely no connection to each other. That means if Ray's phone number changes — and stranger things have happened — I get to change it in three places.

Have you been here? Can you relate? Are you tired of all this hassle? Are you ready to fight back?

### Calling Clark Kent

Now just calm down. There's no need for fighting. You just need to check out a product from Rae Technology, in

Cupertino, California (408-725-2850). It's a super-PIM (personal information manager). There are a lot of PIM products on the market. You've got your schedulers. You've got your list managers. You've got your directories. You've got your contact managers. Some of them combine a couple of functions, such as a calendar and a to-do list. These programs are great, up to a point. What's really needed is one that fully integrates all the critical information you deal with daily. That's where Rae's super-PIM comes in.

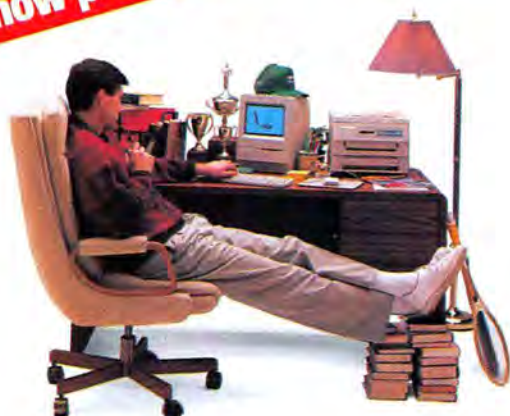
A casual look at a beta version of this super-PIM (at press time, product name and pricing had not yet been set) doesn't appear to reveal anything to write home about. You see the screens that are common in other PIM applications, such as screens for information about people and companies and for various types of calendars and to-do lists. But a closer look reveals a significant difference: All this information is integrated and interconnected. As a result, you can navigate

through your information in ways never before possible.

Take a simple example, my call from Ray O. Sunshine. Using Rae's super-PIM, I would have to enter Ray's information once, his area associate Terry's information once, my appointment with Ray once, and the directions to his office once. I could then access all these entries by doing a search for *Ray*. If I looked at Ray's personal information, I would see a list of recent and future events (phone calls and appointments) and, with a double-click of the mouse, jump directly to any one of them.

There's more. Super-PIM also has a catchall category, called Items, for storing free-form information of any type. The miscellaneous section is searched too when you want to look something up. And you can create manual links between your free-form items and any other information in your personal-information database. In fact, you can create links between any two screens of data anywhere in the program.

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### How Does This Work?

Rae uses a version of ACI US' 4th Dimension database engine as the basic information storage bucket for its application. But unlike most databases, in which you sense the underlying database structure as a limitation on how you can access the data, super-PIM's database stays hidden from view. It doesn't *feel* like a database.

On top of it, Rae has built an object-oriented data-access layer. Interacting with data objects has a more natural feel than interacting with a database. Rae provides objects for people, companies, events, projects, and several types of miscellaneous items. On the one hand, these objects know how to access relevant information from the underlying database, and on the other, they know how to present that data on the various screens of Rae's super-PIM application. And most important, the objects are capable of establishing data links that are typically not possible with a traditional relational database. These links are what

enable you to navigate your way through what otherwise would be a mishmash of information.

**There are a lot of  
PIM products on the  
market, but none of them  
fully integrates all the  
critical information you  
deal with daily.  
That's where Rae's  
super-PIM comes in.**

This data-object approach has another advantage: It can be used to build automated assistance in to an application. For example, when you enter the company name of a new person into the Rae super-PIM, the program prompts you to create a company entry if information about the

company doesn't already exist. Another example: Suppose a person's office phone number and office fax number differ only in their last two digits. Once you've entered the office number, you can enter the fax number simply by typing the last two digits. And although it might seem that searching a data-management system capable of storing a variety of data — including free-form information — might be slow, searches in Rae's super-PIM are quite snappy.

Of course, every silver lining has a cloud. The super-PIM isn't perfect. (Something has to be left to version 2.0, after all.) The data-object technology underlying the super-PIM is flexible and could theoretically enable users to create new types of data objects by specifying what kinds of data the objects should contain and what kinds of links to other data should be automated. But the first release of Rae's application won't let you get at that flexibility to create new object types. It will be possible, however, to store, search, and create links for

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any kind of data, but working with data stored in unstructured item objects won't be automated as fully as it will be with data stored in name, person, company, and event objects.

One such object I would like to see in the super-PIM but that probably won't make release 1.0 is a phone-call object. Eighty percent of my to-do list consists of phone calls I have logged and need to respond to.

Another limitation of the first version is that it will be able to access only data stored in the 4D database engine that ships as part of the super-PIM. The data-object technology, however, can interact with many types of data. CD-ROM content is one possibility.

Who knows — perhaps your Mac's file system is another possibility. Imagine being able to create links between people and events in your personal-information database and files on your hard disk, such as a meeting entry in your personal calendar and the agenda for the meeting.

The initial release will be single-user only, making it a poor choice for anyone who routinely needs to coordinate a schedule with coworkers.

At any rate, by the time you read this, Rae Technology will be ready to take the wraps off its brainchild, and odds are that once you've installed it on your PowerBook, you'll be reluctant to remove it.

#### Oh Boy

You can pretty much count on Apple, when it releases a new CPU model, to introduce some new "standard" interface. Often it's the PDS (processor-direct slot), used for adding video cards, CPU accelerators, and the like to enhance a Mac's performance. In the case of the PowerBooks, Apple messed with the SCSI port. Unlike most other Macs, which use a 25-pin D-type connector for SCSI, the PowerBook 140, 145, 160, 165c, 170, and 180 use a square 30-pin SCSI connector. This means that the 25-to-50-pin SCSI cables you have lying

around — the kind you need for connecting a SCSI device (such as a scanner or a hard-disk drive) to a Mac — won't work with a PowerBook. To connect a SCSI device to a PowerBook, you need a special 30-to-50-pin cable. Of course, Apple doesn't provide one with PowerBooks, so you have to buy one from Apple — the HDI-30 SCSI System Cable — for \$39.

APS Technologies (816-373-5800) doesn't think you should have to do that. That's why it developed a compact cable adapter, dubbed SCSI BOY. (Hey, I don't make up these product names; I just write about them.) One end of this \$29 adapter plugs in to the 30-pin SCSI port on your PowerBook; you plug a standard 25-to-50-pin SCSI cable in to its other end. If you keep a SCSI BOY adapter close to your PowerBook, your connectivity quotient should rise significantly. And it's much smaller and lighter than Apple's PowerBook SCSI cable. ☺

Henry Bortman is *MacUser's* technical director.

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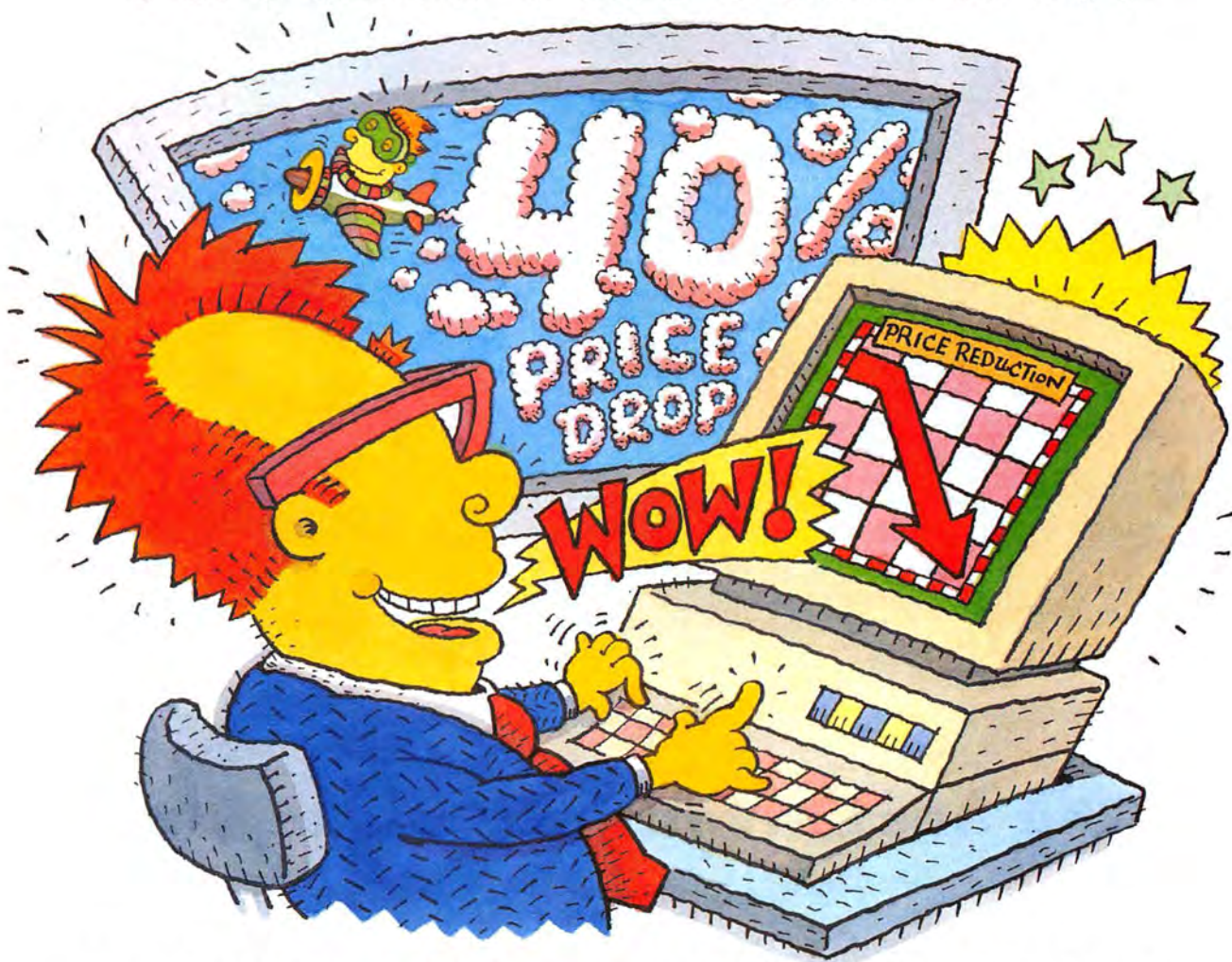


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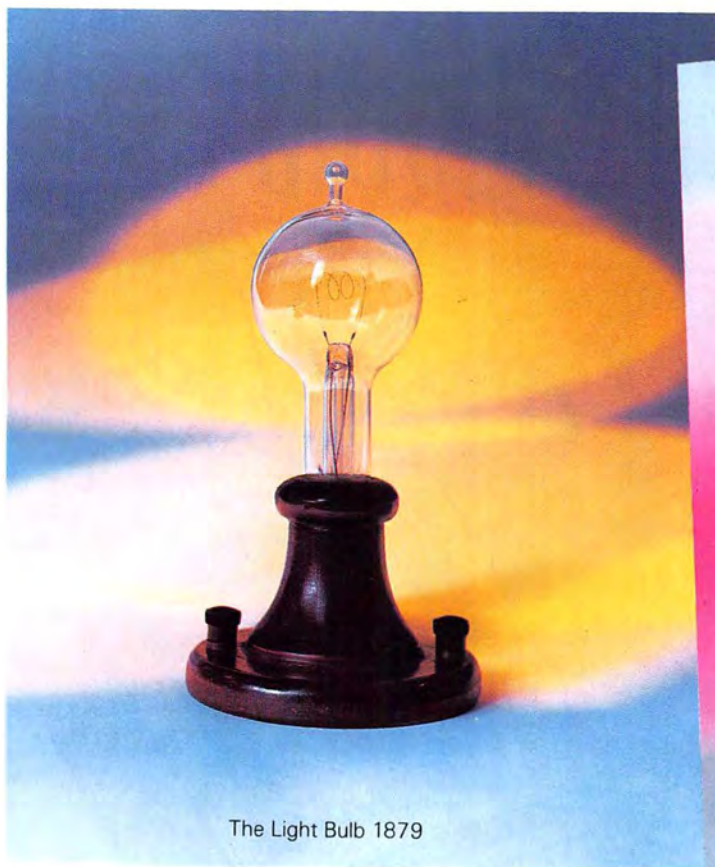
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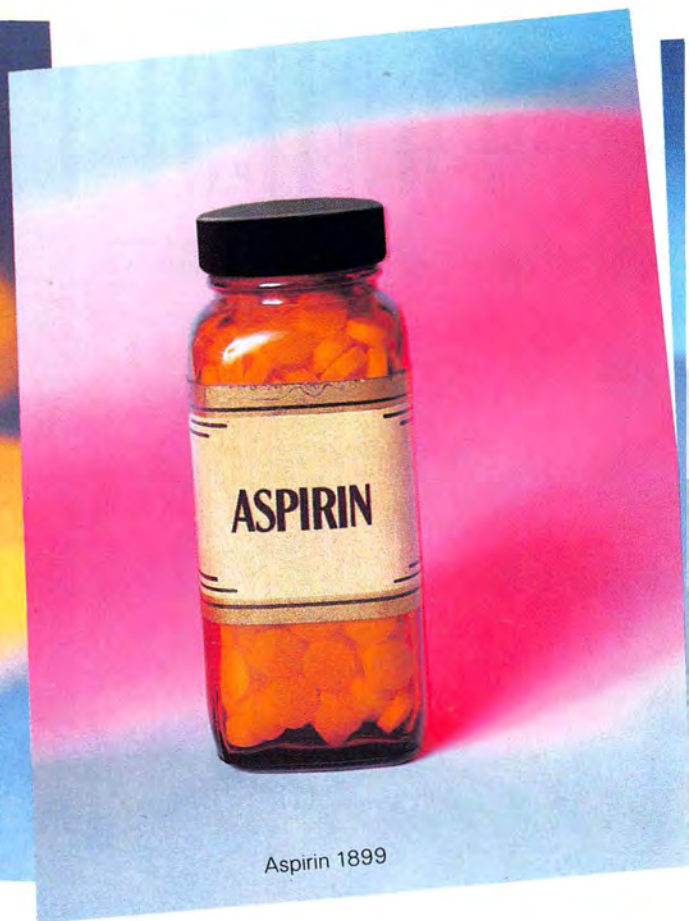
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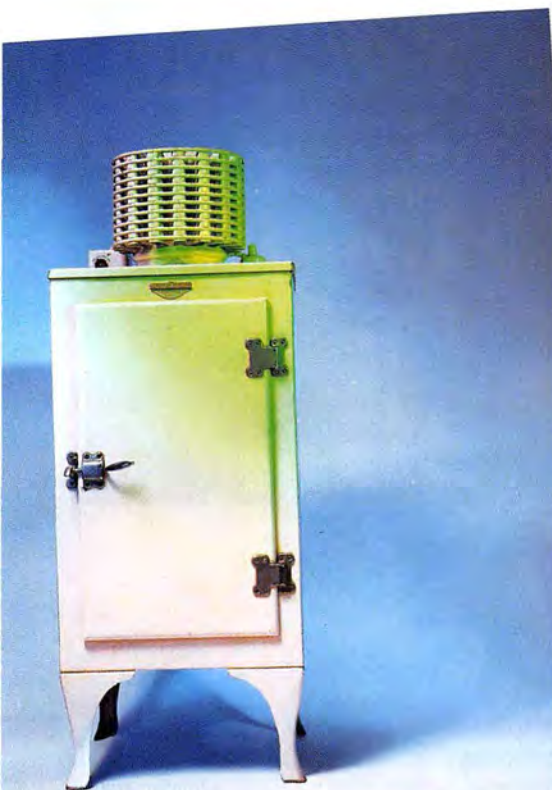
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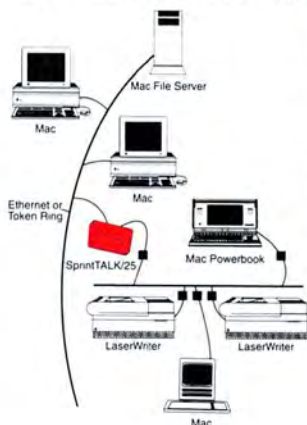


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	Model	Network Connections	Operating Systems	Ports	Printers	Memory	Price
SprintTALK/25	SPTLK25E	Ethernet 10BaseT and BNC Thinnet	AppleTalk	DIN8 LocalTalk	Up to 8 LocalTalk printers/devices	512Kb RAM 256Kb ROM	\$545
	SPTLK25T	4/16Mb Token Ring DB9 and RJ45	AppleTalk	DIN8 LocalTalk	Up to 8 LocalTalk printers/devices	512Kb RAM 256Kb ROM	\$1095
SprintTALK/200 available Q2'93	SPTLK200E/AN	Ethernet 10BaseT and BNC Thinnet	AppleTalk/Novell	DIN8 LocalTalk, 1 parallel 1 Uniprot	Up to 8 LocalTalk printers/devices, 1 parallel PostScript, 1 parallel or serial PostScript	2Mb RAM, 512Kb Flash ROM	\$1295
	SPTLK200T/AN	4/16Mb Token Ring DB9 and RJ45	AppleTalk/Novell	DIN8 LocalTalk, 1 parallel 1 Uniprot	Up to 8 LocalTalk printers/devices, 1 parallel PostScript, 1 parallel or serial PostScript	2Mb RAM, 512Kb Flash ROM	\$1495

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How to Buy

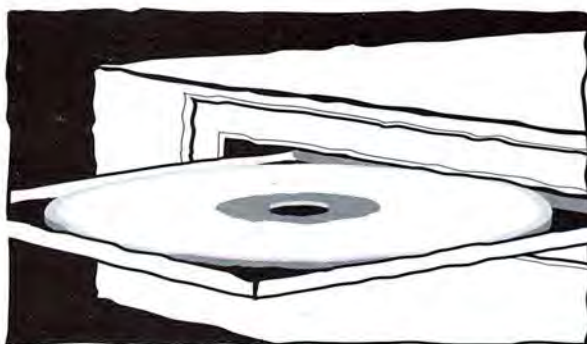
# CD-ROM Drives

✓ If you'll be using Kodak's **Photo CD** technology, choose a drive with *multi-session* capability. Photo CD lets you store as many as 100 digital photographs on a CD-ROM, and you can go back and add photos in several batches until you've filled the disc. However, if you want to access the images added after the first set, you will need a multisession drive. You'll also need software, such as Kodak's Photo CD Access or Apple's Photo Access, that can read the Photo CD format. You can import images into Photoshop with the plug-in program Acquire.

✓ For those who are looking for speed, the discs in **dual-speed** (which NEC calls Multispin) drives can rotate at twice the speed of those in conventional CD-ROM drives. This speeds up data throughput (the rate of data transfer from disc to Mac). Look for triple- and quadruple-speed drives perhaps as early as next year.

✓ Some dual-speed drives offer **built-in caching**. The cache speeds up searches and seeks by retrieving repeatedly used information from the CD-ROM and saving it to memory inside the drive.

✓ Will a dual-speed drive speed up your work? It depends on what you do. Mac-User Labs has found that the dual-speed technology provides better throughput when you're running applications,



*New technology really has made CD-ROM drives faster, although you'll still experience slow-as-molasses performance with some files. But don't let that put you off.*

such as **Photoshop**, that access data in large blocks. However, if you are repeatedly accessing small pieces of information (items from an on-disc encyclopedia, for example), the speed increase is negligible.

✓ A couple of **software options** can also speed up your CD-ROM drive's performance: CD ToolKit, from FWB, provides software caching, and SpeedyCD, from ShirtPocket Software, creates special Finder indexes of your CD-ROMs. SpeedyCD uses these indexes to quickly find files and open folder windows.

✓ If you'll be using a CD-ROM drive for presentations, make sure the drive has RCA preamp jacks, which let you hook it up to a pair of external **speakers**; otherwise, you're limited to using headphones. Apple, Bose, Sony, and Altec

Lansing sell good-quality stereo speakers that have their own power supplies.

✓ Look for a drive that makes it easy for you to set the **SCSI-ID** number. Most drives let you set this number with a push-button or rotary switch, but others require you to set DIP switches, which are less easy to deal with. If the drive does have DIP switches, check to see that they are easily accessible and that the manual clearly describes how to set the ID numbers.

✓ **Dust** is a CD-ROM drive's greatest enemy. If you're going to be working in a dirty environment (such as near an open window or in a room where people smoke), make sure the drive's door closes, thus protecting the mechanism.

✓ In the crucial fight against dust, CD-ROM drives that

have **self-cleaning lenses** are more reliable, but they're also more expensive. Most drives' lenses are inaccessible, but in cases in which they aren't, you can clean them yourself. You can use a photographer's brush to gently blow dust off the lens. Never touch the lens.

✓ If you want to test a CD-ROM driver's **reliability**, mount a disc, drag it into the Trash, and then remount it. If the disc doesn't remount, the driver is questionable.

✓ If you plan to share CD-ROMs across a **network**, you might want to investigate drives that can handle more than one disc at a time. CD-ROM jukeboxes can swap as many as six discs into and out of a single drive mechanism. Another option is a drive that has several mechanisms in one box. These drives are almost twice as fast — and twice as expensive — as jukeboxes.

✓ Unfortunately, you can't hook your **audio-CD player** up to your Mac and use it to read CD-ROMs. CD players have much slower access times than do CD-ROM drives and lack the SCSI interface and error-correction circuitry necessary for computer use.

✓ For more on CD-ROM drives, see "Passport to the Future: CD-ROM Drives," March '93, page 124, as well as the reviews of the Ilvix, December '92, page 126, and the Performa 600 CD, November '92, page 53. 📖

By Victoria von Biel



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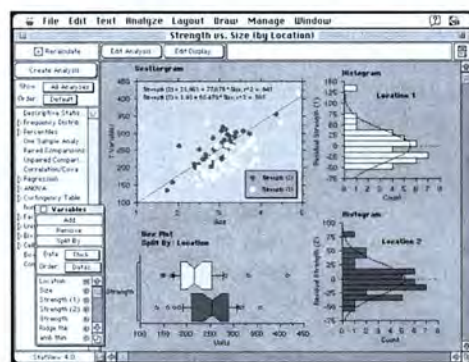
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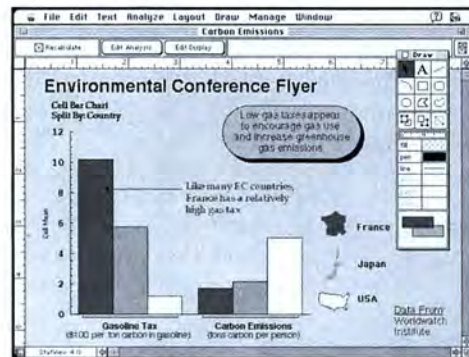
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## POWER TOOLS

**Memory maxers:** Stretch your PowerBook's RAM with virtual memory, a software memory-management tool that uses hard-disk space as random-access memory. Virtual 3.0 (\$99), from Connectix, has a **power-saving feature** that keeps the program on when your PowerBook is plugged in and turns it off when you're running off the battery. Of course, you can use Virtual on your 68030 desktop Mac too. 800-950-5880 or 415-571-5100. ♦ If you're thinking of

installing *real* memory in your Mac, you'll need a disposable antistatic wrist strap (available from electronics stores) and a SIMM remover, which lets you remove memory modules from their sockets without damage. Stratos Innovations' SIMM Remover (\$12.99) is a **hand-held doohickey** that slips over the edge of a SIMM and disengages the socket's latches, letting you slide the SIMM out. 206-448-1388.

**Keeping secrets:** Do you share your Mac with other users and want to keep your own files and applications secure? Do you want to customize the Mac's interface so it's easier for students or novices to use? Using At Ease, from Apple, used to be the only way to easily safeguard your desktop, but now there's MacSecure (\$99.95), from Learning Performance, which lets you **control access** to the hard disk, Finder, Chooser, and Apple menu as well as customize menus. 612-854-2730. ♦ And to really


thwart **inquiring minds**, try CryptoMactic (\$189), from Kent Marsh. This high-level encryption program lets you lock up top-secret documents, using encryption

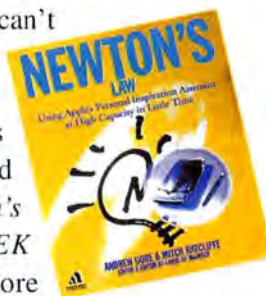
schemes approved by the Department of Defense. 800-325-3587 or 713-522-5625.

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**Power books:** Even if you can't get your hands on one of the Apple **Newton** personal digital assistants, due out this

summer, you can read all about it. *Newton's Law*, by MacWEEK editors Andrew Gore and Mitch Ratcliffe, should be hitting the bookstores this month. Random House Electronic Publishing. 800-733-3000 or 212-572-6045. \$20. ♦ If the buzz around **multimedia** is making you

curious, check out *Multimedia Power Tools*, a soon-to-be-released book/CD-ROM package by Peter Jerram, Scott Billups, and the editors of *Verbum* magazine. You'll get the scoop on designing a Macintosh multimedia system, selecting software, planning projects, and working across platforms. Bantam Computer Books. You can order a copy by calling 800-345-8112 or 212-492-9479. \$49.95. 



By Victoria von Biel



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# Crash Course



*Macs crash — it's a fact of life. Here's how to figure out why your Mac is misbehaving, how to minimize the damage, and how to keep it from happening again.*

**By Adam C. Engst**

**Y**our Mac has many endearing ways of scaring the living daylights out of you. A common tactic is that it just stops working — the cursor won't move, a program quits unexpectedly, or a dialog box with an ominous message and a picture of a bomb appears on your screen. Whatever the sign of failure, it can make you fear for the safety of your precious data. In fact, there isn't *that* much to worry about. For one thing, crashing (or bombing, freezing, hanging, or whatever you choose to call this behavior) is fairly common, and if you take some precautions, it should have little effect on your work. Second, crashing won't harm your hardware in any way, so your Mac itself is safe.

## **La Bomba**

You can take comfort in the fact that if your Mac keeps crashing, it probably isn't your fault. The likely culprit is a programming mistake in one of the programs you use, although occasionally crashes stem from hardware errors, such as a bad RAM chip or a damaged disk sector, either of which may confuse a program. Programming mistakes might cause a program to modify the area of memory that the system reserves for itself or cause two extensions to argue over which one gets to change a certain system behavior, for example. If a program isn't 32-bit clean (that is, if it isn't able to make use of the 32-bit-addressing capability built in to some Macs), its 24-bit dirt will often gum up the works. If you suspect this is

the case, just turn off 32-bit addressing in System 7's Memory control panel. Sometimes a program incorrectly assumes the presence of a math coprocessor; if that chip isn't present, you may see a dreaded "bad f-line error" message (although that message occurs for other reasons too).

Most people restart from a crash by turning the computer off and then on again. If you do this, wait at least ten seconds after powering down, to clear the Mac's memory and let its mechanical parts come to rest. Better yet, use the reset button, which is available on some Macs (it's not always installed or included — check your manual for details). The symbol on the reset button resembles the triangle on the power-on key, which turns on some Macs. Pressing the reset button has the same effect as turning the power off and on again, but it doesn't send the initial stressful surge of electricity through your Mac's components. This method, known as a *warm boot*, is better for your machine than the *cold boot* performed by the power switch. Some Macs are also equipped with an interrupt button, which switches you into a debugger window. (The symbol on this button, which is located next to the reset button, looks like a lightning bolt).

Restarting isn't the only way to recover from a crash. If you use System 7, you may be able to force a frozen application to quit by pressing Command-Option-Escape (you can use this key combination to quit from the Finder too). If you're lucky, the Mac will return control to you and you'll be able to save



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## POWERTOOLS

### BEATING THE SYSTEM

data in other open programs, after which you should restart.

If your Mac crashes only occasionally (every few months or so), don't worry. Programmers make no more mistakes than anyone else, but even inconsequential programming mistakes can make a program crash, much as if people regularly died from stubbed toes. The first thing to do when your Mac crashes is to take a line from Douglas Adams' *The Hitchhiker's Guide to the Galaxy*: Don't panic. Next, jot down exactly what you did before the crash occurred, noting which programs were active and any unusual extensions that may have been loaded at the time.

Don't call tech support after a single crash. Technicians have little chance of determining what your problem is (other than paranoia) based on one event. However, multiple crashes in quick succession indicate a problem; if you can isolate the culprit in this case, you should inform the software company that makes the program.

The best defense against crashing is to save your work frequently. Use a utility that saves for you, such as NowSave (part of the \$149 Now Utilities), from Now Software (800-237-3611 or 503-274-2800); Crash Barrier (\$79.95), from Casady & Greene (800-359-4920 or 408-484-9228); AutoSave II (\$49.95), from Magic Software (800-342-6243 or 402-291-0670); or the shareware Save-O-Matic. On the other hand, you can save some money by developing a nervous tic that causes your left hand to reflexively hit Command-S every ten minutes or so.

#### Common Causes

If you're getting repeated crashing, you've probably got some extensions and control panels that conflict with each other or with some of your applications. Most extensions work their magic by modifying the system, and because no extension knows what other extensions have done to the system, one extension's modifications may confuse another extension. If you want to see if your extensions are causing havoc and you're using System 7, you can easily turn off all of your extensions by holding down the Shift key at startup until you see the dialog box that says, "Welcome to Macintosh. Extensions off." (This feature alone is reason enough to ditch System 6 in favor of System 7.) Tip: If you want to prevent only the programs in your Startup

Items folder from loading, hold down the Shift key just *after* the last extension has loaded.

If you use a lot of extensions, you need an *extensions manager*, a control panel that lets you decide which extensions and control panels load as well as the order in which they do so (launch order can cause crashes). Some of the best such programs are Apple's free Extensions Manager; Conflict Catcher (\$79.95), from Casady & Greene; INIT-Picker (\$69), from Inline Design (800-453-7671 or 203-435-4995); and Now Utilities' Startup Manager. Startup Manager and INITPicker automatically disable extensions that cause your system to crash during startup. If you need more help in locating your problems, Conflict Catcher will walk you through the process of finding conflicts by automatically turning extensions on and off, restarting, asking if the problem still exists, and repeating the process until it decides which combination of extensions and applications is causing the conflict. It's tedious but far more convenient than doing it by hand.

#### The Blame Game

Only two programs — Casady & Greene's Crash Barrier and Apple's free MacsBug 6.2.2 (you can probably get a copy from your local user group) — help you figure out why a program crashed and how to fix the problem. A third program, the free DA System Errors (available on ZiffNet/Mac as SYSERR.SIT, in Library 2), interprets those error numbers that sometimes pop up in dialog boxes. It doesn't give you that much useful information, but it's an interesting troubleshooting source to keep on hand, nonetheless.

If you use Crash Barrier, its window (instead of the bomb dialog box) will appear whenever your Mac crashes, with information on which program crashed, what the error was, and the possible cause. Crash Barrier's Novice mode lets you try to fix the problem, quit the offending program, and/or restart your Mac. The Expert mode adds four buttons that let you attempt to continue, resume (almost no programs can resume from a crash), reenter (it tries to get the application running again — good luck), and "unhang" (available only if your Mac has frozen).

Crash Barrier includes an automatic-save function that assumes you want to



use it in all programs unless you specify otherwise. (It even tried to save America Online's "Goodbye" window and almost messed up my automated mail sessions as a result.) I prefer NowSave's approach, which lets me select the programs in which I want it to be active. In my testing, Crash Barrier was not able to fix a problem or let me continue or resume from a crash, but that's not surprising. Like MacsBug, Crash Barrier is attempting to work at a time when it can't assume anything about its environment. If it ever fixes the cause of a crash, you're doing well.

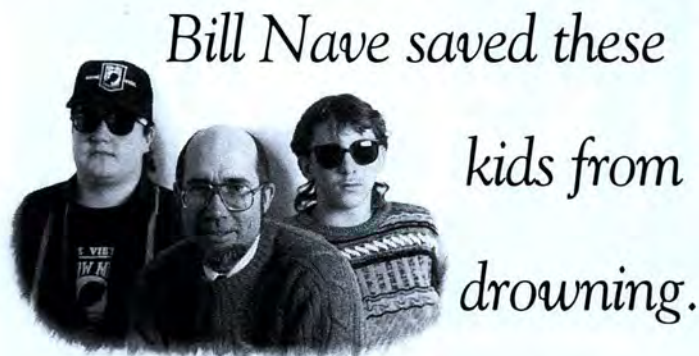
MacsBug is a true power user's tool. It's officially a *debugger* — that is, programmers use it to check programs as they write them. MacsBug takes over when the Mac crashes, displaying information about which program actually crashed (some of my Mac's seemingly random crashes turned out to be caused by background applications — a program that's launched but not being used — something I never would have figured out on my own). MacsBug lets you recover as gracefully as possible: You can use the Go command to continue, the Es (escape to shell) command to quit the crashed program and return to the Finder, and the Rs (restart) command to restart the Mac. Pressing the Escape key while you're in MacsBug toggles between MacsBug and what your screen looked like at the time of the crash, which can prove quite useful when you are troubleshooting.

Crashes don't always activate MacsBug, and freezes never do. If MacsBug doesn't kick in, you must either press the interrupt button — which will bring you to the MacsBug window — or use the free Programmer's Key extension (on ZiffNet/Mac as PROKEY.SIT, in Library 3), which simulates the effect of the interrupt key when you type Command-power key.

Don't be intimidated by MacsBug. Yes, it's a high-level debugger, but if you know the Go, Es, and Rs commands, you'll stand a good chance of recovering from most crashes.

Ultimately, you have little control over whether your Mac crashes. Make the best of any crash scene by learning to help yourself as much as possible. ☐

Adam C. Engst is the editor of the on-line magazine TidBITS. You can reach him on CompuServe at 72511,306.



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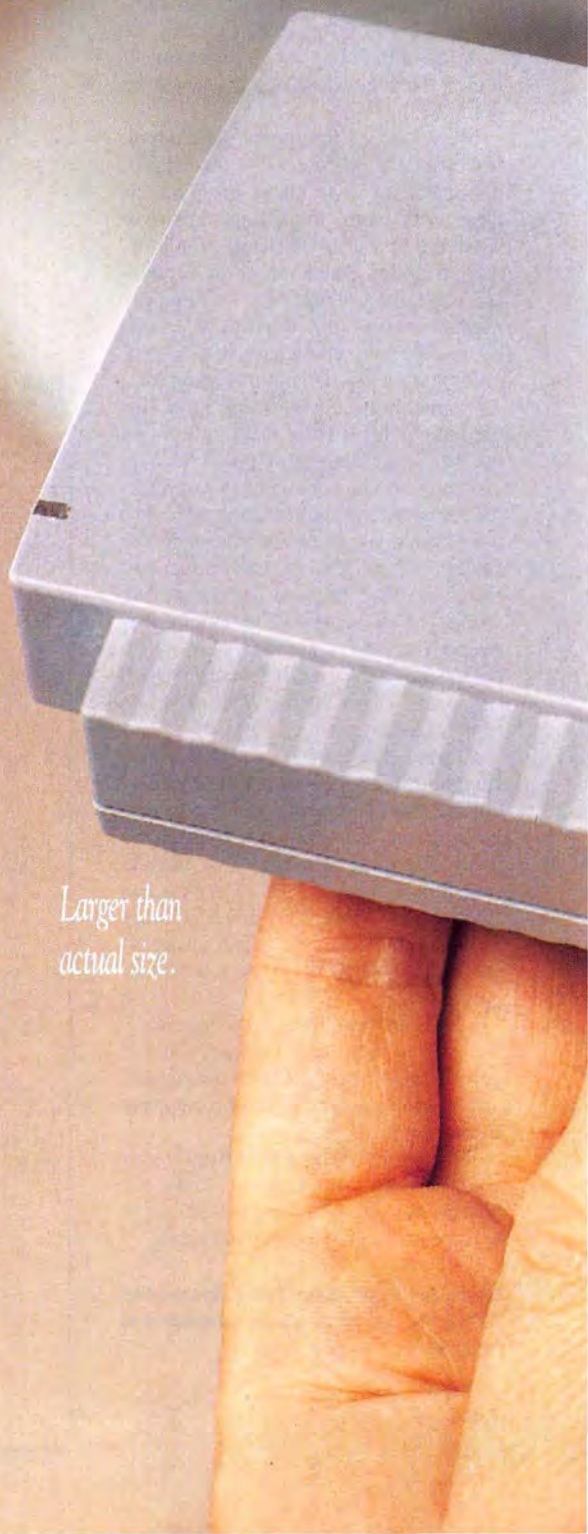
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127 MB 3.5"	\$298	\$368
170 MB 3.5"	\$338	\$388
240 MB 3.5"	\$448	\$518
525 MB 3.5"	\$998	\$1048

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C 85 MB 3.5"	\$198	\$258
C 120 MB 3.5"	\$248	\$308
C 170 MB 3.5"	\$288	\$348
C 212 MB 3.5"	\$368	\$428
C 540 MB 3.5"	\$898	\$958

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1.2 Gig Wren 5.25"	\$1398	\$1498
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**Upgrading the**

# Mac IIsi

*Maybe you bought your IIsi recently, when prices dipped below \$900 for a machine. Or maybe you've had your IIsi for a couple of years and you're starting to feel its limitations. Here are some cost-effective tips for getting the most out of your IIsi.*

You can never have too much **memory**. The IIsi comes with 1 megabyte of RAM on its logic board plus four SIMM slots that can accept 1-megabyte, 2-megabyte, 4-megabyte, 8-megabyte, and 16-megabyte SIMMs rated at 100 nanoseconds or faster. At press time, RAM was inexpensive enough to make going to 17 megabytes (four 4-megabyte SIMMs plus the 1 megabyte on-board) realistic. Of course, if you plan to do a lot of Photoshop work or other memory-intensive tasks, you might want to opt for 33 megabytes of RAM or even 65 megabytes.

If you use a CD-ROM drive, **external speakers** are a good investment, or visit your local electronics store and spend about \$40 for a pair of external speakers you can connect to the headphone jack on the back of your CPU.

The connectors to the IIsi's **internal speaker** have a tendency to corrode, with the result that the sound goes dead — you don't even hear the startup chime. If this is the case, have your dealer dismantle your IIsi, thoroughly clean the speaker connections with the anticorrosive product Cramolin, and then slightly bend up the spring-loaded leads before reassembling the unit.

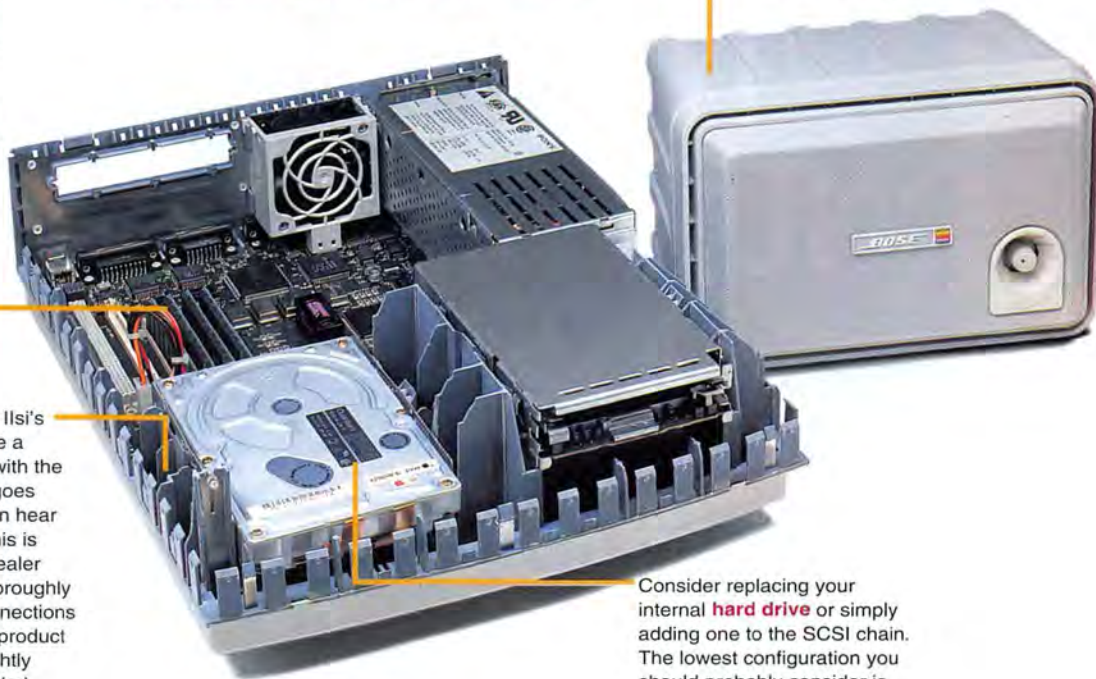
Consider replacing your internal **hard drive** or simply adding one to the SCSI chain. The lowest configuration you should probably consider is 120 megabytes. Good drives start at about \$300 for an internal drive and \$400 for an external one.

**W**ith only one slot, the IIsi wasn't really built for upgrading. And before you can do anything, you have to add an **adapter card** to the slot so that it can accept either a NuBus or a PDS (processor-direct slot) card. Apple offers PDS and NuBus adapters that include a 68882 FPU (floating-point math coprocessor) for \$199 each. (The FPU speeds up programs that perform certain types of operations, such as mathematical calculations in a spreadsheet.) Third-party vendors also sell adapters (usually with an FPU as an option). If you use math-intensive programs, just adding an adapter card with an FPU will give you some speed gain.

Should you go for **PDS or NuBus**? A PDS means more

options for increasing speed whereas NuBus provides more options for upgrading the IIsi's video capability, but this is not always the case. (If you add a card to a NuBus adapter, be sure to find out from the manufacturer or dealer how much of a power draw the card has. You can't go any higher than the IIsi's 15-watt ceiling, and the adapter itself takes 5 watts.)

With the adapter installed, you have two options for accelerating your IIsi: an **inexpensive cache card** or an expensive CPU-accelerator card. Cache cards (which require a PDS) use high-speed static RAM to store frequently used information and instructions so they can be retrieved much faster, yielding a speed increase of 25 percent or better. Cache cards



**By Tom Petaccia**



# IT HURTS TO BE NUMBER ONE.

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## POWER TOOLS

### THE MAC WORKSHOP

cost from \$200 to \$400. Some cache cards, such as DayStar Digital's Combo-Cache (800-962-2077 or 404-967-2077), let you break the IIsi's one-slot limit by offering additional PDS slots for video or other expansion cards.


**Accelerator cards** are more expensive but can boost your IIsi's speed to that of a IIfx or even a Quadra 950. Accelerator cards typically include the faster CPU and clock, disk cache, and optional FPU. You can buy a 33-megahertz 68030 PDS accelerator with FPU for around \$750. NuBus accelerator cards

**Accelerator cards are  
more expensive  
but can boost your IIsi's  
speed to that of a IIfx  
or even a Quadra 950.**

such as the 33-megahertz 68040 card (\$1,800) from Technology Works (800-926-3148 or 512-794-8533) include additional RAM slots, allowing you to add even more memory.

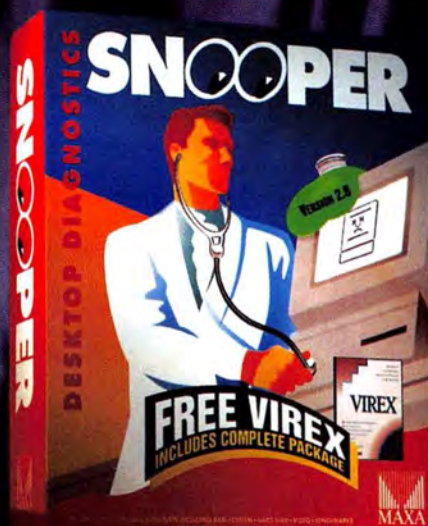
The internal video of a IIsi can support as many as 256 colors (8-bit color) on a 13-inch monitor. If you want a larger screen or better color fidelity, you'll have to add a **video card**. If all you want is 8-bit color, then you can go with either a PDS or NuBus card (\$300 to \$700). If you want 24-bit color, however, you're probably going to have to add a NuBus card. SuperMac (800-334-3005 or 408-245-2202) offers its Spectrum 8•24 PDQ card in a PDS configuration, but the card doesn't support 24-bit color in monitors larger than 13 inches (always check to see if the card you are considering can support your monitor size). Prices for 24-bit-color cards start at around \$900.

If you need a NuBus accelerator *and* a NuBus graphics card, you can repackage your IIsi in an **expansion chassis** such as the \$1,295 Expanse NB4, from Second Wave (512-343-9661), which lets you add four NuBus cards. The chassis includes its own power supply.

If you just want more RAM and a new hard drive, upgrading a IIsi is a good move: You'll get increased performance for a reasonable price. If you want to do more, it's wise to start looking at a **new, more powerful Mac** such as the Centris 610, which offers the power of a 68040 processor for around \$2,500. 



# DESKTOP DIAGNOSTICS FIND THE PROBLEM



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ALERT! is available at: Egghead Software • CompUSA • Computer City



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First in desktop diagnostics



## THE SOFTWARE DIAGNOSTIC FOR MACINTOSH

Maxa's ALERT! is essential Desktop Diagnostic™ software that lets you find the source of software conflicts and fix them!

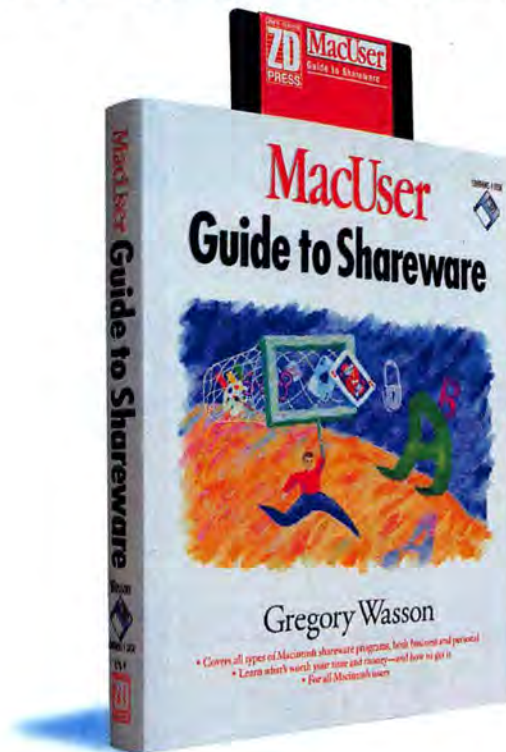
ALERT! helps find the cause of system crashes and frozen screens before they happen. ALERT! diagnoses software on your Mac and reports actual and potential conflicts and problems. ALERT! also consults a database of known conflicts to further isolate possible problems. The database is free to ALERT! users and is updated monthly over online services.

ALERT! is fully networkable under System 7.

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# Shareware To the Macs.



ISBN: 1-56276-076-9  
Price: \$34.95

Maximize your share of the diverse and colorful world of Macintosh shareware with *MacUser Guide to Shareware* by popular *MacUser* writer and contributing editor Gregory Wasson. This all-new resource points you to the shareware that's worth your time and money—and includes some of the best of it on disk right inside!

Introductory sections of the text make sense of the shareware phenomenon, telling you what shareware is, where to obtain it, and when and how to register it. The rest of the book is a uniquely focused and resourceful shareware reference that sorts through the hype and pulls out the true winners in every software category: education, games, connectivity, security, text and graphics tools, and more.

All of the recommended shareware has been used and evaluated by *MacUser* editors, ZiffNet/Mac system operators, and ZiffNet/Mac subscribers. It's recommended because Macintosh experts know it's reliable and safe for your system—and because users just like you have found that it really works.

*MacUser Guide to Shareware*: The best way to maximize your shareware investment.



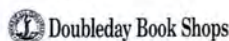
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## TIP SHEET

**N**obody ever said you had to live in Cupertino to be a Macintosh expert. Know-it-alls are everywhere, from Manhattan to Malibu — even in Waldport, Oregon, where we found our own Mac guru, Philip Russell. Each month Phil shares his own tips plus the best from the 70-odd Macintosh-user-group (MUG) magazines he reads each month. But Phil can't do it alone. To those whose undocumented Mac tip *MacUser* prints, we pay \$25, and the Reader Tip of the Month earns \$100.



Send your tip, together with your name, address, and phone number, to Tip Sheet, c/o *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

You can also contribute tips electronically via



ZiffNet/Mac, the on-line service for *MacUser*. Send them to

Gregory Wasson at 72511,36. Be sure to include your full name and mailing address along with the text of the tip.

By Philip Russell

Reader tips compiled by Gregory Wasson

■ Handy tips for **speeding up** your Mac: Store no more than 17 files per folder, keep frequently used files near the top of the folder hierarchy, and don't nest folders more than three deep.

■ Microsoft **Excel 4.0** lets you split your Mac's screen to see top and bottom simultaneously, but sometimes all you want is to keep the column headings in view as you work through a spreadsheet. You can "freeze" column titles so they stay at the top of your screen no matter how far down the spreadsheet you scroll. Here's how: Select the row immediately below the titles, and then select Freeze Panes from the Window menu. To unfreeze the titles, select the same row and choose Unfreeze Panes from the Window menu.

You can freeze both the column titles and the row titles. To do this, select the cell immediately to the right of the first row title and immediately below the first column title. Go to the Window menu, and select Freeze Panes. You can now scroll up and down or left and right without losing sight of either the row or the column titles.

■ To open every **Word** document with the ruler showing,

go to Commands (on the Tools menu in Word 5) and scroll to Open Document With Ruler. Click on Do It. That's it.

■ Holding down the Command key when you're using the drawing tools in Microsoft **Excel 4.0** forces the lines you've drawn to snap to the nearest cell borderlines.

■ You can quickly determine which fonts were used in a **PageMaker** document if you are using Fifth Generation's font-managing utility, Suitcase. Close all the fonts in Suitcase. Now open the document, and check the Font menu. Any font whose name is grayed out is one of the fonts used in that document. Of course, you also see any fonts contained within the system, because Suitcase does not remove them.

■ Fastest **disk eraser** in the West: If you have two floppy drives, put an initialized, blank disk into the second drive and copy it over to the disk to be erased. Some say you save a minute this way. The best I can get is a 30-second savings. (You save time because no verification is performed.)

■ Have you ever seen the raised printing typical of many business cards? It is called

simulated engraving. To achieve it with **LaserWriter** output, spray five to ten coats of clear lacquer (available from hardware stores) onto a printout. It puffs up the toner and makes it look like raised printing. Experiment and see.

■ If you have successfully kerned a pair of letters in **PageMaker**, you can highlight the kerning space, copy it, and paste it into other identical kerning pairs.

■ If you have a graphic (a graduated-fill file, for example) in a **DTP** file that is causing a page to redraw as you move around the page, replace the graphic with a placeholder. Just before printing, replace the placeholder with the problem graphic.

■ Rumor has it that if your computer requests initialization of an otherwise good disk, the **disk may work** after arriving at a temperature that approximates the temperature it was at when the information was committed to disk. Try heating the disk a bit — between the hard drive and the Mac, for instance.

■ If you hate editing italic text, change it to plain text, edit it, and then change it back. Or use **Word 4.0** or later, which gives you a slanted insertion point.

### Tip of the Month: PowerBooks

If you're thinking of buying a commercial PowerBook utility that will let you queue up your print jobs while you're working outside your office and then automatically print them out once you're back on your home network, try these strategies before you add yet another extension to your System Folder.

Put an alias of the PrintMonitor application into the Apple Menu Items folder. When you're on the road, launch PrintMonitor and then select Stop Printing from the File menu. Close PrintMonitor, and print as usual. When you're back in the office, simply launch PrintMonitor again and turn printing back on. Your print

jobs will be sent to your usual printer. (This works with Hewlett-Packard's print monitor for DeskWriters also.)

If you need to switch among several printers in several locations, place appropriately named copies of the LaserWriter driver in your PowerBook's Extensions folder and then select a different printer with each copy. When on the road, you can then queue jobs to any one of several printers simply by going to the Chooser and picking the appropriate copy of the LaserWriter driver.

Chris Goodwin  
Hoboken, NJ





( System 7 Find File )



( Retrieve It! )

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## POWER TOOLS

### TIP SHEET

■ Hold down the Shift key in **Word** as you move a tab, and all tabs to the right of that tab also move. In Word's Table format, however, holding down the Shift key ensures that *only* the selected tab moves.

■ If rebuilding a floppy disk's desktop (Command-Option-Restart) does not solve all problems, use **ResEdit** to delete the damaged disk's Desktop file. Your Mac will then automatically create a new, undamaged Desktop file.

■ If you use a version of PageMaker that predates 5.0, you have to install two copies of **PageMaker** (naming one something like PageMaker2) in order to have two PageMaker documents open at the same time. Unfortunately, this can mess up your hyphenation if you copy and paste between the documents — the reason being that each document might have its own hyphenation dictionary. To get hyphenation back to normal, close both copies of PageMaker and reopen the target document. It will now hyphenate correctly.

■ **PageMaker** users know that pressing Command-Option while clicking the mouse toggles between the Fit in Window and Actual Size views. But did you know that Command-Option-Shift-click toggles from Actual Size to 200% Size and back? Add Shift to a 200% Size selection from the menu (not to a keystroke), and you'll be able to see your document at the 400% Size view.

folder, deleting its icon, and naming it with a series of dots or hyphens. (This is not new.) If you accidentally select the empty folder from the Apple menu, however, your Mac will obediently open it. So, one variation of this trick is to use a sound file rather than an empty folder as a spacer, which adds just a bit of spice for those of us who fumble with the mouse.

Option-drag your favorite sound from the System file. Change its icon and name as you would a folder's. Then drag it to the Apple Menu Items folder. The next time you accidentally select the divider, you'll get a pleasant pitch of your choosing rather than an empty folder.

Mark L. Bruce  
North Canton, OH

### Keyboard Layouts

If you operate your Mac with System 7 and several foreign-language keyboard layouts, the Keyboard menu, which is part of the system software, will come in handy. To turn it on, use ResEdit to open the System file's itlc resource and double-click on the resource ID number 0. In the window that comes up, page down to the Always Show Keybd. Icon option. Click on the radio button labeled 1. When you restart, you'll see a menu displaying the flag of the active keyboard on the right part of the menu bar, between the application icon and the help icon.

Now you can choose keyboard layouts by pulling down the Keyboard menu and selecting the desired layout. Normally the Keyboard menu is intended for people who run multiscrypt system software (such as for both Arabic and roman scripts), so they can quickly switch back and forth between roman and nonroman keyboard layouts and scripts. This method sure beats going to the Keyboard

### Reader Tips

#### Apple Menu

This tip is a twist on Apple-menu-rearrangement and -divider schemes. Many people reorganize the Apple menu by adding spaces to the beginning of filenames. You can also add a menu divider or spacer by creating an empty



control panel every time.

Dominik Hoffmann  
Madison, WI

### AppleTalk Connectors

Rather than gluing together AppleTalk connectors to prevent accidental unplugging as Philip Russell suggested in the March '93 Tip Sheet (page 241), here is a simpler solution that will let you reconfigure the system later if you need to.

Tie the connectors together with lacing cord. If you can't obtain lacing cord, use cheap plastic string, available at most hardware stores. Now if you want to reconfigure the system, a pocket knife is the only tool you'll need.

Fred Pollak  
Whitestone, NY

### PostScript Printers

If you want your PostScript printer to stop printing a test page, use the LaserWriter Font Utility 7.0; on the More Tidbits disk, which comes as part of your system software. Just choose Start Page Options from the Utilities menu.

Jeff Potter  
San Jose, CA

### Backups

Every time I start my Mac, I insert a 1.4-megabyte floppy disk named Backup. Whenever I modify a document on my hard disk, I can rapidly back it up by saving a copy onto the Backup floppy disk. This means I always have all document changes backed up.

Every week, Backup serves as a complete list of every document I have changed or created since the end of the prior week. When I put all these changed documents onto permanent backup floppies each week, I erase the Backup disk and start over. The Backup floppy is always available in my disk drive and makes it easy to back up every document after each work session. It cannot be any easier

than this, and it gives me great peace of mind.

Robert Weil  
Worcester, MA

### Excel 4.0

In Excel 4.0, there's a new way to use the scroll bars. In older versions of Excel, if you wanted to go outside the active area of the spreadsheet with the mouse, you had to use the scroll arrows to scroll — a time-consuming process if you wanted to move far beyond the active area of your spreadsheet. With Excel 4.0, hold down the Shift key as you drag the scroll box and note the row number or column letter in the cell-address box on the left side of the edit line. Release your mouse when you're where you want to be. It's fast and easy.

Shane Devenshire  
Walnut Creek, CA

### Microsoft Mail

If you have a folder in which you always store mail, put the Microsoft Mail DA into that folder and place an alias to it in the Apple menu or wherever you launch MS Mail. Whenever you save a message, the folder in which MS Mail resides will be the default.

Jeff Potter  
San Jose, CA

### Word 5

You can't use Word's Open dialog box to open more than one file at a time, but you can open several files at the same time — even if they're in different folders — by using Find File, on the File menu.

Once the files have been located in Find File's Search window, simply hold down either the Shift or the Command key to select any of them. Click on the Open button, and if you have enough RAM, all the documents will open.

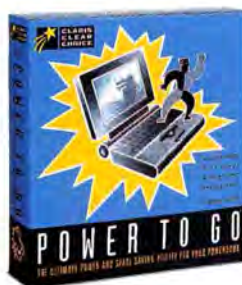
Joseph Holmes  
Brooklyn, NY

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NO. 1

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Mac

NEWS

Over 100,000 interested computer users rely on ZiffNet for virtually anything that has to do with computing. It's all here — over a thousand of the best downloadable shareware and freeware titles, including the world-famous *MacUser* utilities...late-breaking industry news...computer buying information...interactive industry forums...technical support...and more — all available **online!**

### Ten Essential Programs For Everyone

CATEGORY	SHAREWARE	FILENAME & LOCATION
Antiviral	<b>Disinfectant:</b> The premier antiviral utility all Mac users should have.	DISINF.SIT Library 8
Compression	<b>Stuffit Lite:</b> Free up hard disk space and decompress files downloaded from ZiffNet/Mac with the ruling monarch of Mac compression utilities.	SITLITE.SEA Library 1
Font Management	<b>Carpetbag:</b> Manage your font and sound collections with this shareware control panel.	CARPET.CPT Library 3
Calendar	<b>Calendar DA:</b> This simple and elegant monthly calendar has space for daily appointments.	CALEND.SIT Library 2
Paint Programs	<b>LightningPaint:</b> A deluxe paint program that won't paint you into the poorhouse!	LPAINT.CPT Library 1
Personal Information Manager	<b>Address Book:</b> This nifty application has a great search engine, dials phone numbers and prints envelopes, labels, Rolodex cards and DayTimer sheets.	ADDRBK.SEA Library 1
Screensaver	<b>Darkside:</b> Protect your screen from burn-in — try Darkside, a mondo cool screensaver.	DARKSI.CPT Library 1
Spreadsheet	<b>Mariner:</b> Spread your sheets to the wind with Mariner, a superb shareware spreadsheet with a dazzling interface.	MARINE.CPT Library 1
Telecom	<b>ZTerm:</b> It does scripting, macros and lots more. May be the only program you'll ever need for telecommunicating.	ZTERM.CPT Library 1
Word Processing	<b>miniWRITER:</b> A great text editor that's perfect for small notes, memos and so on. A must-have for composing messages off-line for online services.	MINIWR.SIT Library 2

**There are over a thousand more top-rated programs to choose from. Just type GO DOWNTech for a complete listing.**

**When Apple Released The PowerBook 145, Product Managers Logged On...**



Right after Apple® released its new line of PowerBooks, the PowerBook™ development team logged onto ZiffNet/Mac's Executives Online forum to talk with *MacWEEK* and *MacUser* editors and readers. The resulting threads about the new technology were a rollicking, diverse discussion ranging from delivery dates and potential problems to what the team planned next. Drop by the Executives Online forum to tell industry insiders what you really think about their products...find out what's hot...and download the latest demo of a product. To see what's in store, type GO CALENDAR.

**Get More Out Of Your Favorite Ziff Magazines ... Online!**



ZiffNet/Mac gives you direct access to the archives of Ziff magazine product reviews, buying guides, tips and tricks, and more. You'll also have in-depth information **linked to the current printed issues**, so you can dig deeper into topics of interest.

For example, when you see a new product reviewed in *MacUser* or *MacWEEK*, you can log onto ZiffNet/Mac and discuss it with the lab analysts, ask questions related to your own specific requirements — even download a demo of the product! You can also speak directly to Ziff editors and columnists like *MacWEEK* editor Henry Norr and *MacUser* columnist Bob LeVitus to get their opinions

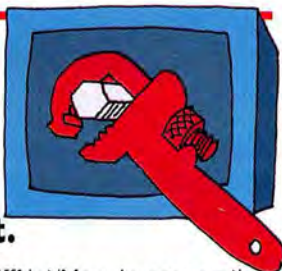


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and insights. All you have to do is type GO MACMAG. This kind of access to information and industry experts simply isn't available **anywhere else.**

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## Get The Inside Scoop On The Industry The Same Way Industry Leaders Do.



What will computer industry insiders be talking about next week? Find out on ZiffNet/Mac! You'll get weekly news from *MacWEEK* — a controlled circulation publication — not available on any newsstand. But with ZiffNet/Mac, industry news, market trends, even inside information from Mac the Knife are all delivered right to your Mac the Friday night **before** they're published. There's also *NewsBytes*, the award-winning international daily newswire, to keep you right up to the minute on late-breaking developments.

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## Blueprint 4\*

Blueprint 4 makes drafting and design easy for architects, engineers and illustrators. The new version 4 incorporates all the professional 2D features found in MiniCad+4. The price/performance ratio is absolutely unbeatable. Try it on Manufacturer's 30 day money-back guarantee! CAD0024 \$219\*

Publisher: GraphSoft

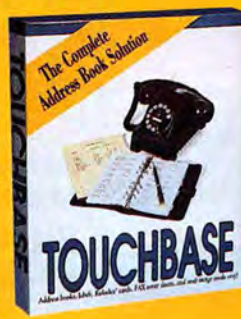
**\$219\***

## TouchBase Pro/DateBook Pro Bundle

**NEW!** All NEW! The award winners just got better. TOUCHBASE and DATEBOOK have turned PRO! Now, a contact manager that provides power and ease of use, and a time manager that has the flexibility to track all your daily activities. With TOUCHBASE PRO, you can manage your contacts, dial your telephone, write letters, and print address books, labels, envelopes and fax covers. DATEBOOK PRO combines calendars, appointments, To Dos, alarms and reminders to keep you on time. Best of all, TOUCHBASE PRO and DATEBOOK PRO are completely integrated. Together they form the BEST in personal information management.

Publisher: After Hours Software  
BUS0299

**\$89**



## ALERT!

MAXA's ALERT!™ is essential Desktop Diagnostic™ software that lets you find the source of software conflicts and fix them! ALERT! helps users find the cause of system crashes and frozen screens before they happen. ALERT! diagnoses software on your Mac and reports actual and potential conflicts and

problems. The program also consults a database of known conflicts to further isolate possible problems. With Alert's responder module, consultants, corporate MIS managers and end-users can diagnose and repair software conflicts over a network.

Publisher: Maxa  
UTI0353

**\$119**

## Bridge 7.0

Bridge 7.0 pits you and your computer partner against two computer opponents on your Mac. Improved color graphics and screen layouts, plus enhanced bidding and play, make it more fun. Your computer opponents have their own personalities, and digitized speech. Bridge 7.0 recognizes the stayman and blackwood conventions and allows you to adjust the style from conservative to aggressive.

Publisher: Artworx ENT0461

Also available:

Grail Quest- A graphic adventure.

ENT0262 \$19

KaleidoKubes-

A mind-bending game. ENT0417 \$12



**\$35**

## Fractal Design Painter 2.0



Painter, the award winning 24-bit color, Natural-media™ painting program, now includes photo design features. New Painter 2.0 features include image retouching, color separations, tear-off tools, visual previews, additional natural-media tools like marbling, glass distortion and liquid effects, snap-to and adjustable grid paper, Type 1 and

TrueType™ font support, and straight line tools. Perfect for designers, fine artists, graphic artists, and students.

Publisher: Fractal Design

GRA0412

Also available:

Fractal Design

Sketcher 1.0 GRA0393 \$99

**\$279**

## Dynodex 3.0

Enter, find and edit your address book information effortlessly! Dynodex will dial the phone, import and export effortlessly, and allow you to write a memo without going to a word processor. You can also synchronize files. Easily print labels, envelopes, Rolodex® cards, and pages to any size personal organizer. Publisher: Portfolio Software BUS0277 Also available:

DynoPage 2.0- Print any file to any page size! DTP0055 \$55

Dynodex Paper- Premium grade organizer size paper. ACC0428 \$14

**\$55**



**NEW!**

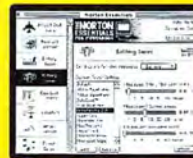


## Norton Essentials for PowerBook

Norton Essentials will Double the Battery-life of your PowerBook! Norton Essentials for PowerBook is a collection of 10 of the most advanced and comprehensive PowerBook utilities ever.

Publisher: Symantec

UTI0341



**\$89**

## Personal RecordKeeper 3.0

Nolo's Personal RecordKeeper organizes all your family's important records in one place. Net worth and home inventory reports now export to Quicken. "Nolo Press has taken on the ultimate organizing task and come up with

a winner." (MacUser 6/91) BUS0254 \$29

## WillMaker 4.0\*

Bestselling WillMaker makes it easy to write and update your will, create a children's trust, and save on lawyer's fees! WillMaker was the first self-help legal package developed. Computer Shopper says "...no question it's the best."

Publisher: Nolo Press  
BUS0132 \$35\*

**\$35\***



## Infini-D 2.0

Winner of the 1992 MacUser Eddy for Best 3D Package! Infini-D 2.0 combines a friendly interface with 3D power: instant conversion of EPS files into 3D objects, awesome animation capabilities, and QuickTime support. Infini-D is the 3D package of choice for graphics and multimedia professionals. GRA0303 \$699



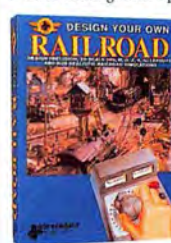
## BackBurner\*

BackBurner is the distributed network renderer for Infini-D. Run BackBurner alone, or add an parallel processing burn up your rendering time! Includes a FREE Engine! Publisher: Specular International GRA0436 \$369\*

**\$369\***

## Design Your Own Railroad

Design Your Own Railroad enables you to design, build, and operate a model railroad on your Mac. Lay out the track using precision CAD tools. Draw scenery with a complete set of color drawing tools. Operation includes coupling and uncoupling, switching, pickup



and delivery of loads with revenue tracking, and, of course, crashing! It's an indispensable tool for serious modelers, and fun for rail fans of all ages.

Hard drive and 1 MB memory required.  
Publisher: Abracadata  
GRA0398

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Symantec Antivirus for Macintosh (SAM<sup>TM</sup>) is the most comprehensive antivirus program you can buy. It combats all known viruses and virus clones, and detects file irregularities that could be unknown viruses at work. SAM gives you double protection with its two components: *SAM Intercept*, an Init that protects against viruses by checking every floppy disk as you load it, and *SAM Virus Clinic*, an application that lets you scan files, folders, volumes or network servers for viruses and file irregularities.

### StuffIt Deluxe: The most popular data compression program for Macintosh.

StuffIt Deluxe 3.0 invisibly compresses your files and folders an average of 50%. And, it stuffs archive files tighter than any other archiving software. It doubles your disk space, saves you time and money when sending files over network and modem lines, and helps you to backup infrequently used files. Best of all, with StuffIt Deluxe you can continue to use compressed or archived files normally - with no added steps necessary!

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The ALL NEW Power User's Tool Kit 15.0 is **FREE** from MacWAREHOUSE when you order from us. If you want the disk, ask for product code number **AAA0039**. You only pay \$2.00 postage and handling charges. The programs are shareware, so you can try them free of charge. If you wish to continue using them, some authors ask that you pay a small fee (\$4-\$25). All the details are explained on the disk, which is yours to keep.



### FileGuard 2.7

It's about as much software-based security as you can get in one package. *MacUser*, March 1992. Protect your hard drive from copying, erasure and unauthorized access (including security bypass with a System diskette). Protect applications, files, and folders (including System folder) from unauthorized access, deletion, and illegal copying. Deny desktop alterations by unauthorized users. Keep an eye on system usage with FileGuard's User Log which continuously tracks user or group activity. System 7.0 Compatible.  
 Publisher: ASD Software  
 UT10135



**\$139**

### TrashGuard

Delete files forever, with TrashGuard. Using the Trash Can to delete a file only makes the space available, but does not erase data. Any snooper with a file recovery utility can retrieve "Trashed" files easily. TrashGuard not only deletes files, it actually removes them from your hard disk. It even complies with D.O.D. standards. TrashGuard can be set with a time delay in case you change your mind. You can "train" TrashGuard to discriminate between confidential files and normal files.  
 Publisher: ASD Software  
 UT10322



**\$49**

### WindoWatch

Keep track of how you are using your Macintosh. WindoWatch automatically generates a timesheet in the background, as you work. It can be set to track window or application usage. Use it to record time spent on a project, justify new hardware or software purchases, or document use of your Mac at home (for the IRS). WindoWatch operates entirely in the background, never interrupting normal use of your Mac.  
 Publisher: ASD Software  
 UT10264



**\$89**



### Cachet

Cachet, Editor's Choice for "Software Product of the Year" - *MacUser*, lets you edit desktop color images in a remarkably intuitive and accurate way by using your own eyes! With Cachet's unique Edit-by-Reference feature, you'll never make another printing mistake because you adjust the on-screen colors of your image to match a reference image that has already been printed. Other features include MultiChoice, a quick way to correct color, EfColor for matching color to any printer and more!  
 Publisher: EFI  
 GRA0432

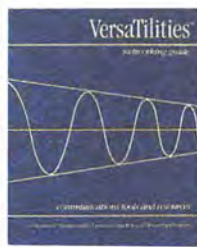
**\$399**

### Times Two

Times Two is an easy, one-time installation that expands your disk to twice its size in minutes. Your PowerBook's 40 MB becomes 80 MB instantly. Your iMac's 80 MB disk swells to 160 MB. Without ever opening your Mac or installing expensive hardware, you can expand your disk space in minutes. *MacUser* Editor's Choice Award Finalist!  
 Publisher: Golden Triangle  
 UT10343  
 Also available:  
 Times Two 800K  
 UT10344 \$99



**\$99**



### VersaTilities

VersaTilities provides a suite of tools for use with Apple CommToolbox and MacTCP applications. VersaTilities' tools provide support for Telnet and FTP (Client/Server) on LocalTalk, Ethernet and Serial (via SLIP) networks. VersaTilities' SLIP support enables Mac users to remotely access the Internet by dialing into a SLIP server.  
 Publisher: Synergy  
 COM0140

**\$59**

### IntelliDraw

Aldus IntelliDraw defines an exciting new category of drawing program, with intelligent features that give you an easy new way to draw, refine and visually experiment with your ideas. Innovative smart tools link graphics in your drawing so they respond to changes automatically. Create visual "what-if" scenarios with features like intelligent clip art & templates, automatic symmetrical objects, and dimensions lines. Auto-alignment, shape blending, powerful text handling capabilities, unlimited layers, color gradients, standard draw tools and more.  
 Publisher: Aldus GRA0354  
 Also available: IntelliDraw Competitive Upgrade  
 SID0028 \$99



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WRD0060 WriteNow Workshop	85.
<b>WordPerfect Corporation</b>	
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#### COMMUNICATIONS & NETWORKING

<b>Apple Computer, Inc.</b>	
NET0250 AppleShare 3.1	969.
COM0131 AppleTalk Remote Access	159.
COM0126 Macintosh PC Exchange	69.
<b>Dayna Communications, Inc.</b>	
NET0125 DaynaPORT E/Z	269.
NET0076 DaynaPORT E/SE	149.

#### Retrospect

Retrospect continues to dominate the market for network backup, and for good reason.



MacWEEK, 1992 Diamond Award. Retrospect® 2.0 provides both incremental backup to protect daily work and true archiving to remove inactive files from your hard disk to a storage device. Advanced scripting and scheduling provide automatic, unattended backup to all desktop volumes.

**Publisher:** Dantz  
**UTI0227**

## \$147

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NET0007 PhoneNET® Plus, SE & II	31.
NET0019 PhoneNET StarController®	899.
NET0329 Timbuktu® 5.0	129.
NET0034 Timbuktu/Remote® 3.0	129.

#### PowerMerge

File Synchronization for the Mac. If you use more than one Mac, Power-Merge makes sure you are always working on the latest version of your files on each Mac. It shows which files are going to move, notifies you of conflicts if files have changed on both Macs and creates a Log of what was updated.

**Publisher:** Leader Technologies  
**UTI0312**

## \$79

#### Global Village (full line available)

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Hayes	
MOD0065 Bundle 9600 ULTRASmartModem	679.
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GRA0430 PhotoShop 2.5	549.
<b>Aldus</b>	
GRA0305 FreeHand 3.1	395.
GRA0279 Gallery Effects Vol. I	129.
GRA0354 IntelliDraw	199.

<b>GRA0112 SuperPaint 3.0</b>	99.
<b>DTP0072 PageMaker 4.2</b>	495.
<b>UPG0003 PageMaker 4.2 Upgrade</b>	95.
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GRA0347 QuickTime Starter Kit	149.
<b>Claris</b>	
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<b>Dream Maker</b>	
GRA0105 Clippures Vol. 1 Business Images	69.
<b>Fractal Design</b>	
GRA0412 Painter 2.0	279.
<b>Graphsoft</b>	
BUS0184 Azimuth 2.1	299.
CAD0024 BluePrint 4.0	219.
CAD0030 MiniCad-4.0	595.
<b>Gryphon Software</b>	
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#### Typestry

Pixar Typestry is exciting software which creates dimensional text from Type 1 and TrueType fonts. Move, rotate, scale and extrude words or individual letters and decorate fonts in any number of interesting appearances. Create images for logos, publishing, design, presentation graphics or multimedia. Typestry invokes RenderMan magic to transform a simple word into an extraordinary picture.

**Publisher:** Pixar  
**FON0482**

## \$189

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<b>Battery Technology Inc.</b>	
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ACC0837 Powerlock for Powerbooks	49.

#### White Knight V.11

White Knight will give you powerful communications at an affordable price. Geared to all levels of experience, it supports file transfer protocols like ZMODEM, 3 styles of YMODEM, Flash & 3 styles of Kermit. Terminal emulation supports TTY, VT52, VT100 & VT102 as well as 32 bit color QuickDraw & large monitors. Comes with a FREE copy of Okto.

**Publisher:** FreeSoft  
**COM0060**

## \$85

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UTI0297 CPU Connectix for Powerbook Utilities	49.
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DRD0494 Pro 105 MB Drive (Quantum LPS)	499.
DRD0546 Pro 210 MB Drive	639.
DRD0549 Pro 40 MB Drive	379.
BND0094 44MB Syquest Removable	479.
BND0095 88MB Syquest Removable	589.
<b>SuperMac Technologies</b>	
DRD0437 Spectrum/8.24 PDD	899.

#### UTILITIES & PROGRAMMING

<b>Abbott Systems, Inc.</b>	
UTI0113 CanOpener 2	59.
<b>Aladdin Systems</b>	
UTI0302 StuffIt Deluxe 3.0	69.
<b>Apple Computer, Inc.</b>	
SYSD0004 System 7.1 Personal Upgrade Kit	79.
SYSD0003 All Ease	45.
<b>Caere</b>	
UTI0293 OmniPage Direct	269.
UTI0202 OmniPage Professional	549.
<b>MAXA Corporation</b>	
UTI0337 Snooper Kit 2.0 w/ Free Virex	179.
<b>MicroMat Computer Systems</b>	
UTI0285 MacKeg 2.0	89.
<b>Symantec Corporation</b>	
UTI0151 Norton Utilities for the Mac 2.0	95.
UTI0334 Symantec Antivirus for Mac 3.5 (SAM)	65.

#### FolderBolt

FolderBolt-If you wish to protect folders and applications from changes, copying or unauthorized use, then you need FolderBolt. It's fully integrated into the desktop and makes management of your Macintosh a breeze. UTI0212 \$75



**Publisher:** Kent Marsh, Ltd.  
Also available: FolderBolt/  
NightWatch II Bundle  
**UTI0338 \$129**

#### NightWatch II\*

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## HELP FOLDER

**Q**uestions, anyone? Here's where to get answers from the experts. Bob LeVitus and Andy Ihnatko are the authors of the best-selling *Dr. Macintosh's Guide to the On-Line Universe*. Andy Ihnatko is also a longtime activist with BCS•Mac. They're ready to answer your questions

about everything Macintosh.

Write to Help Folder, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404.

Don't want to wait for an answer? Post your question on ZiffNet/Mac, MacUser's

on-line service, and get a reply from Bob (76004,2076), Andy (72511,204), or one of the other MacUser experts. See the masthead in this issue for instructions on how to sign up.

By Bob LeVitus and Andy Ihnatko

### Alias the Real Thing

**Q.** Why do people place aliases of icons on the Mac desktop when they can just go ahead and put the icon itself on the desktop?

Julia Berkeley  
Milwaukee, WI

**Bob:** People use aliases for a couple of reasons. The best one is that many applications expect to be in the same folder as their supporting files (dictionaries, thesauri, add-in modules, Help files, and the like). What's more, some applications are extremely finicky about being moved out of that folder; if you move the application's icon to the desktop, the program will complain that it can't find its supporting files.

Another reason for using aliases is that some files — such as control panels — need to be in a specific folder to operate properly. If you move a control panel to your desktop, it won't load at startup. But as long as the original control-panel file is where it belongs (in the Control Panels

folder), you can keep an alias of it on the desktop so that you can access it easily.

**Andy:** Speaking of control panels and aliases, sometimes studly folks make an alias of a control panel, leave the alias in the Control Panels folder, and then put The Real Thing into the Extensions folder. This way they are able to get a control panel to load before everything else, rather than having to wait until all of the extensions have stamped into the Mac's memory first, as is usually the case.

Other reasons for aliasing are purely anthropological. Getting yourself in the habit of installing a piece of software once and then aliasing as needed will save you from the embarrassing Three Copies of ResEdit on One Hard Disk syndrome. Also, those boys and girls at Apple went to a lot of time and trouble to give us aliases, and you want to thumb your nose at all their hard work and dedication? Obviously you're a far braver person than I am.

### Folder from Hell

**Q.** I have a small but nagging problem. I was using Central Point Software's MacTools to undelete some files, and the process created a folder called Restored Files. I dragged all the restored files back to their appropriate folders, but when I dragged the Restored Files folder to the Trash and tried to delete it, I got an error message saying that an item was in use, even though the folder was empty. I tried using Apple's ResEdit, CE Software's DiskTop, Central Point's MacTools, and whatever else I know how to use to delete it, but nothing worked. There don't seem to be any hidden files in the folder, but the window indicates that the folder contains one item. Please help!

John Koopman  
USAF

**Bob:** The most likely cause of this problem — usually referred to as the “folder from hell” syndrome — is a corrupted directory structure on your hard disk. You can try

### \*... But Were Afraid to Ask

My favorite teacher was Mr. Paladino, back at Pine Hill Elementary. He was the man who taught me that if you want to carry a bowl of soup across a room without spilling a single drop, you should ignore the bowl entirely and just walk normally, trusting your brain's own internal gyroscope to work it all out. As I made my way through the educational system, professors taught me about dead philosophers and Turing machines but no other teacher ever responded to a simple question with a simple answer.

So as a lasting tribute to Mr. Paladino, I devote this section to answering simple questions. Send 'em on in, no matter how humble they may be. To protect you from pinheads like Mrs. X — a teacher who once gave me an F on a term paper because I used different-colored paper for the cover page — we'll say that your question was sent in by the patron saint of simple thought.

**Q.** I've often heard people refer to files as being invisible. How does a file become invisible, and why would anyone want an invisible file?

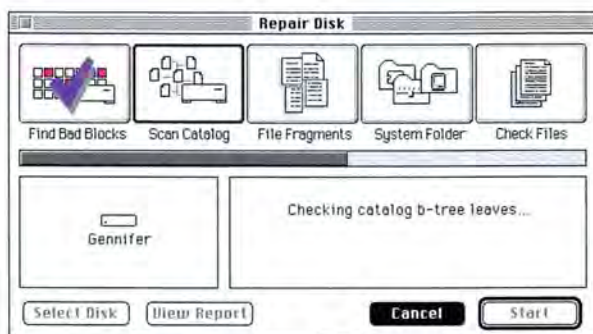
Bertie Wooster  
London  
England

**Andy:** Invisible files (which strikes me as a good name for a crime novel), whatever files they may be, are usually made invisible on purpose by software developers because they contain vital data that developers don't want users to mess around with.

The most famous invisible file is the Desktop file, a directory file that catalogs the contents of your hard disk, but invisible files are also found on file servers and on foreign volumes mounted as Mac volumes. And in the days when a Mac Plus with two floppy drives was an object of unbridled lust, making files invisible was a popular (if exceedingly feeble) mode of copy protection.

Feeble, of course, because invisible files are invisible only in the Finder. You can see most invisible files, such as the Move&&Rename folder, in standard Open dialog boxes. In fact, the reason you don't see an invisible file in the Finder is that a software switch contained within the file's Finder information has been turned on, which lets the Finder pass right over the file as if it were Spike Lee at the Oscars. You can turn the switch off (and make the file visible in the Finder) by using Apple's ResEdit, CE Software's DiskTop, or any other file-whacking utility.





**Figure 1:** If you're cursed with a folder from hell that you just can't trash no matter what you do, the most likely cause is a corrupted directory on your hard disk. A disk-repair utility such as Fifth Generations' Public Utilities (shown here), Central Point's MacTools, or Symantec's Norton Utilities for the Macintosh can help you repair the damaged directory.

the following techniques, in this order:

1. Run Apple's Disk First Aid, which can often repair damaged directories. You'll find Disk First Aid on the System Tools disk, which came with your System 7 disks.

2. Repair the volume, using MacTools, Symantec's Norton Utilities for the Macintosh, or Fifth Generations' Public Utilities. These utilities can often repair damaged directories that Disk First Aid can't fix (see Figure 1).

3. Create a new folder on a floppy disk. Give it the same name as the evil folder. Now copy the new folder from the floppy disk to the window on your hard disk that contains the folder you want to delete. A dialog box will ask, "An item named Folder from Hell already exists in this location. Do you want to replace it with the one you're moving?" Click on OK. This sometimes does the trick.

4. Back up all the data on the hard disk, and reformat the disk. This will solve the problem if all else fails. I suggest making two backups, just in case.

**Andy:** Well, Bob here managed to sneak in all the tips I was going to mention, so I'm left with dopey bridesmaid comments: For example, there

is a shareware product whose purpose in life is to seek out and destroy even the most stubbornly hellish folder. However, it doesn't work any better than the tips you just read. (If you want to try it anyway, you can get HellFolderFix from on-line services such as America Online and CompuServe or from user groups.)

### Phone Sets

**Q.** Articles about telecommunications always talk about modems, protocols, and on-line services, but they never say anything about the telephone hookup itself. Which leaves me with the following questions: Is a dedicated line required? What happens if someone picks up another extension while I'm connected? What happens if someone picks up an extension and starts to dial? When someone calls in while I'm connected, does the caller get a busy signal? And finally, does Call Waiting affect transmission?

G. Lamotte  
Devon, PA

**Andy:** A dedicated line is not required. Many phone companies offer "data grade" phone lines at a premium price, but what you gain — which can be anything from pathways through fiber-optic

lines to merely a promise to solve line-noise problems in minutes instead of days — is generally not worth the money. A dedicated line is a real convenience for any die-hard nethead, for obvious reasons: You can stay on-line for 23 hours a day (allowing just enough time for personal relationships) and still be able to call out for pizza. In most areas, a second phone line costs only \$20 a month, so it's definitely worth looking into. The first time you get your dedicated line up and running, you'll be glad you decided to give up paying the heating bills to afford the second line. A dedicated line also prevents innocent bystanders from witnessing the sticky fates you hint at in your second and third questions.

A modem is just a kind of phone, after all, so someone picking up an extension noses in on the transmission and (most likely) causes you to lose the carrier and thereby the connection — another good reason for buying a second line. If I still haven't sold you on the second-line concept, go to your local Radio Shack and buy a sack of Teleprotectors (catalog number 43-107). Snap one of these eight-dollar doohickies between each of the phones in the house and its respective wall outlet, and whenever one telephone is in use, all the other phones will go dead. Originally this device was designed to prevent eavesdropping, but when you use a Teleprotector in conjunction with a modem, a pea-brained interloper can whistle the "Antler Dance" song into the phone without affecting your telecommunication session one bit.

Finally, in answer to your last question, Call Waiting *does* affect transmission. But you can prevent this problem simply by having your modem dial \*70 before it dials

the number (that is, ATDT \*706251928 instead of ATDT 6251928). This disables Call Waiting for the duration of your modem's call. However, I suggest that you look into other modern digital features that may be available from your phone company — for example, Voice Mail, which kicks in whenever you already have the line tied up. You might also try Call Answering, which causes your phone to automatically return a person's call as soon as your phone line is free.

**Bob:** I guess it's now my turn to plug our book: If you had a copy of *Dr. Macintosh's Guide to the On-Line Universe* (Reading, Massachusetts: Addison-Wesley, 1992), written by Andy and me, you would already have known the answers to these questions and more.

### Version Therapy

**Q.** When I look at software I usually take note of its version number. To my consternation, I've noticed a complete lack of convention in how version numbers are used. What is the difference between 2.0.1 and 2.10 or 2.12 and 2.1.2 or, for that matter, between 2.12 and 2.13? I would appreciate a definition of whatever standard or convention may be in use.

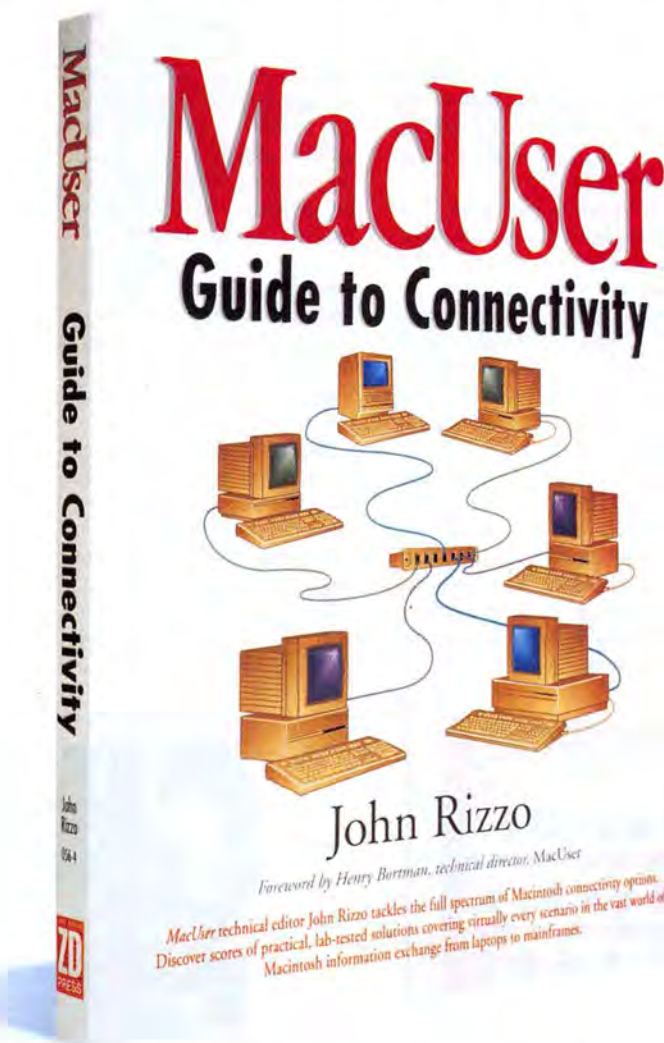
Douglas Lowe 1.0.1.1  
Osaka  
Japan

**Bob:** A standard or convention for version numbers? Ha! No such luck, Douglas. There are some rather loose conventions, but as you might expect from a nonstandard standard, there are plenty of exceptions.

When the whole number is increased — from version 1.0 to version 2.0, for example — it usually signifies a major upgrade. A major upgrade generally includes significant new features and/or performance enhancements.



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## POWER TOOLS HELP FOLDER

Minor upgrades are denoted by the first number to the right of the decimal point — 2.0 to 2.1, for example. Minor upgrades run the gamut from bug fixes to feature enhancements and performance improvements.

Very minor upgrades — usually minor bug fixes — are indicated by the rightmost number. Some companies put another decimal point in there, just to confuse you (2.1.2); other companies don't (2.12). Because there's no true standard, one company might call its minor bug fix "version 2.0.1" whereas another company might call its minor bug fix "version 2.1."

To make things even more confusing, some companies, such as Microsoft, employ letters for very minor bug fixes, using designations such as

5.0a and 5.0e. If there were a standard, I imagine these would translate to 5.0.1 (or 5.01) and 5.0.5 (or 5.05). I guess companies that use letters think that 5.0e will inspire more confidence than 5.0.5 (or 5.05).

As far as cost goes, most companies charge for major upgrades — version 3.0 to version 4.0, for example. Minor upgrades may or may not cost you, depending on the company and on the changes made to the program. Very minor upgrades are usually, but not always, free.

Some companies automatically send bug fixes to all registered owners at no charge; others require you to call and ask for the fix. And some companies go so far as to charge for bug fixes, a big no-no in my book.

The bottom line of this long-winded diatribe is that version numbers don't mean much. My best advice is to not automatically upgrade to the latest version. Read the product specifications, or call the vendor and ask what's in the upgrade, and then order it only if you like the new features or need the bug fixes. Always accept a free upgrade. Finally, never throw away the old version until you've used the latest, greatest version for long enough to establish that it doesn't have major bugs.

**Andy:** Actually, Apple has defined and published a version-numbering standard (which Bob described), which the industry has gone out of its way to meticulously ignore. By the way, you might also run across software that includes the letter A in its

version number, denoting that it's *alpha*, or still in development and nowhere near a final release. Software with a version number that includes the letter B is *beta*, meaning that the program is pretty much as it will appear commercially but is being released to a select group of people for final debugging. The absence of a letter means it's the final, commercial version — that is, the vendor is sick and tired of fixing its product's bugs for free and now wants users to pay \$300 a crack for the pleasure of finding the bugs themselves.

A final comment born of years of experience: Yell loud and long if you think an upgrade fee is way out of line. It helps relieve stress, and sometimes it'll actually get you a free upgrade. ☺

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## This Month on ZiffNet/Mac

### Zmac Reviews

**H**ow healthy is your hardware? The fact is, sometimes you have to give your Mac a physical — when components aren't working as they should or when you notice a change in performance, for example. A suite of shareware and free-ware utilities can help you test your hardware and make some initial diagnoses. These are also great tools to take along with you when you're shopping for hardware. This month we highlight three benchmarking and performance-testing utilities that are available in the ZiffNet/Mac Download & Support Forum. You can also download this shareware from bulletin-board systems or acquire it from user groups. The CompuServe filename and library name are in parentheses.



### SCSI Evaluator †††

SCSI Evaluator (filename SCSIEV.SIT, Library 1) is a technically complex drive-testing utility. The benchmark test measures such things as head-switching time and rotation speed, and the program can also verify disk blocks and reassign bad blocks. The raw data it provides is confusing to nontechnicians, and there's no interpretive information for novices. You also can't save data to a text file. This tool is only for the pros, but to learn more, send in the \$20 shareware fee and you'll get in-depth documentation.



### Speedometer †††½

Speedometer (filename SPEEDO.CPT, Library 1) is a heavyweight utility that checks the performance of your CPU. It runs a series of industry-standard benchmark tests, including Dhrystones, Whetstones, and fast Fourier analysis. If all this sounds confusing, Speedometer's extensive documentation helps users make sense of the results, as does the fact that Speedometer combines all results into one easy-to-comprehend number. (The PowerBook 170 we tested received an overall figure of 4.4 and a Mac Classic earned a 1.0.) Easy to use and fun for comparison testing, Speedometer also offers depth of analysis for professional testers. Shareware, \$30.



### Test Pattern Generator †††

Test Pattern Generator (filename TESTPA.SIT, Library 1) is a monitor-checking program that lets you determine whether age, heat, or a poorly executed upgrade has warped your on-screen image. The test image is a grid with a large circle in the center and smaller circles in the corners — like a television test pattern. A series of tools lets you correct any shrinkage to restore the maximum height and width of your screen. The Linearity, Brightness & Contrast, and Focus tests let you adjust for the best-possible image.

Test Pattern Generator works with several monitor sizes, although PowerBook-monitor sizes are not built in, because this venerable program hasn't been updated

since 1988. Although an Unlisted Screen Size option allows you to adjust for size, the program is quirky at best on newer Mac models; it needs a compatibility update.

Test Pattern Generator is easy enough for novices to use, and it's accurate and robust enough for pros too. Shareware, \$10.

### Tip of the Month

#### Automatically Decompress Files

One of the most common complaints about on-line and bulletin-board-system files is that, because they are compressed, you need to launch a separate application to use them. (Compressing files reduces their size, making them cheaper to download.) You can, however, avoid the inconvenience of decompressing by using a little-known feature of Stuffit Expander, from Aladdin Systems. When this free utility's Watch Folder feature is turned on, it monitors a folder and automatically decompresses any file put into it. Almost any telecom program — including CIM (CompuServe Information Manager) and MicroPhone — lets you designate a folder into which all downloaded files are automatically placed; just tell Expander to watch that folder. You'll find Stuffit Expander (filename STUFEX.SEA) in Library 1 of the Download & Support Forum.

### HOT UTILITY

**B**ack to the Folder is a custom *MacUser* utility designed to help you jump directly from one folder to another from within an Open or Save dialog box. Like the commercial utility Boomerang, Back to the Folder is a pull-down menu within the dialog box. The menu builds a list of all the folders you've used recently. You merely choose a folder from this list in order to jump to it directly. The list builds up quickly, so you can save some folders permanently to the list while purging the rest.

Back to the Folder also lets you create a default folder in which you can save new documents automatically. This is a nice feature for Excel, which always, by default, saves new documents to its own application folder rather than to a documents folder.

Back to the Folder was programmed by Michael Throckmorton. The Ann Arbor, Michigan-based independent Mac programmer can be reached on ZiffNet/Mac at 72511,410. Back to the Folder is available exclusively on ZiffNet/Mac and, under the membership fee, is available for free for one month. Just type GO ZMC:POWERTOOLS until May 25, 1993. After that, find the file B2FOLD.SIT in Library 3 of the MacUser Forum (GO ZMC:MACUSER).

By Ben Templin



# Direct Line

MAIL ORDER SECTION



*For many of you, mail-order is your primary means of purchasing Macintosh products and services. That's why MacUser has put together the following special section. Direct Line offers a convenient place to quickly find the products you need from the vendors you want to buy from. But before you shop by phone, look for the mail-order company that is best for you. Here are a few tips to help you get the most out of your buying experience.*

## How to Buy Mail Order Products

### Research The Company

Well-established companies tend to be reliable, but if you're not sure how well established a company is, it pays to do a little research and ask a few questions.

### Know What You Want

Know exactly what you want before you call. Magazines, on-line forums, and user groups are all good places to seek advice.

### Check Compatibility

To avoid having to return merchandise, find out whether the product you're interested in is compatible with your system.

### Pay With Credit

Whenever possible, use a credit card. Some credit-card companies do such

things as double your warranty or give you a refund if you find a lower price elsewhere. If you have a problem, your credit-card company will deal with the mail-order company.

### Confirm Prices

Confirm the price when you place your order, including delivery charges. Some companies will waive the delivery charge.

### Delivery Methods

Ask about delivery methods — find out what carriers are used, how fast they are, and how much each one costs. Record delivery information.

### Return Policies

Because you're buying sight unseen, make sure the company has a return policy you're comfortable

with. Find out if you're responsible for paying shipping charges on returned goods and whether you'll be charged a restocking fee.

### Check Packing Slips

Before you use your new merchandise, make sure it's exactly what you ordered — the correct model or version number, for example. It's easier to return goods before they've been unpacked.

### Repair/Replacement Services

If you're buying hardware, find out how the company handles repairs or replacements.

### Technical Support

Technical support varies from company to company. Make sure you know what help is available.



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# The Best Monitors And Display Cards!

NEC is the industry leader in graphics technology. They make the best monitors and display cards in the business! Lifelike graphics, QuickTime movies and 3D images. Reach right out and grab them! Right now, Mac users can take advantage of NEC's Reality Check offer—buy a 24-bit card and a 3FGe, 4FGe or 5FGe and get a \$100 rebate from NEC! If you've purchased a 3FGx, 4FG or 5FG previously and buy a 24-bit card during this promotion—NEC will send you a check for \$100 too!

This new generation of MultiSync monitors is designed specifically for graphics—with flat-square screen design, razor-sharp resolution and dripping with color! The screen design actually gives you 36% more screen image than other comparably-sized monitors! Plus, NEC's unique Invar Shadow Mask technology delivers a 20% brighter picture with improved clarity and contrast. The 4FGe gives you microprocessor-controlled color with its AccuColor feature.

To beautifully compliment these fine monitors, NEC proudly announces its new 24Xp Color Display Card. Stunning color, unmatched speed. Combine the 24Xp card with any of the new MultiSync monitors and you've got yourself an awesome combination.



Choose from the economical 15-inch NEC 3FGx (with FREE monitor lens), the higher-resolution 3FGe, the 15-inch, award-winning 4FGe with resolution up to 1024 x 768, the 17-inch 5FG or 5FGe with resolution up to 1152 x 870 or the MultiSync monster—the brilliant 6FG, with a giant 21-inch display, ripping color and all the NEC technology built-in. Call Tiger for details on NEC's hot new monitors—The best in the business!

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N27-8555 NEC 5FG	\$1279.90
N27-8506 NEC 6FG	\$2305.90

## NEC COLOR MONITOR LENSES

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N27-8304 4FG Monitor Lens	\$65.90
N27-8305 5FG Monitor Lens	\$95.90
N27-8306 6FG Monitor Lens	\$165.90

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## NEC COLOR DISPLAY CARDS

N27-8424 MacFG 24Xp Color Card	\$479.90
N27-8442 MacFG 24X Color Card	\$1175.90

The 24X is ideal for 3FG & 6FG supporting 1152x870 with 24-bit images.

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Works with all SCSI and SCSI-2 hard disks, including SyQuest removables and erasable optical disks, and is fully compatible with file recovery programs like Norton Utilities and MacTools. A couple of clicks installs the driver on the user's disk. After that, TimesTwo goes to work—without control panel or other system software. And here's the kicker: TimesTwo is 100% transparent. TimesTwo works by compressing disk

blocks at the driver level, reducing the amount of space they require, and increasing the true size of the disk. To The Finder, a 40MB drive appears as an 80MB drive! TimesTwo intercepts disk data as the Finder requests to load it and handles all compression and decompression BEFORE The Finder gets the data. To you, everything looks perfectly normal, with no slowdown. All you'll notice is more space!

By operating at such a low level—lower, in fact than the level used by your application programs, TimesTwo eliminates problems associated with changing the files themselves. File icons, sizes and creator types remain the same. You safely get twice the space.

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TimesTwo is the first driver-level disk expansion product for the Mac. No one else has this technology. Other products play Russian Roulette with your data, compressing individual files, changing creator types.

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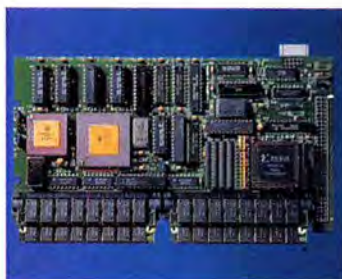
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640x870 pixels, 75 Hz, 78 dpi, low-emissions design.

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The Mobius 030 Accelerator outperformed many new Macs in a CPU benchmark. (Source: MacWorld Magazine)

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## Bernoulli MacTransportable MultiDisk 150



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Minimum requirements: Mac Plus, System 6.0.

\$499. MacTransportable 90 PRO (#5012)

**\$1898.**



## Radius Rocket 33MHz

Powered by Motorola 68040 CPU, a Rocket takes over computer-intensive commands, leaving your Mac's CPU free for input/output functions. And this is a great price for real performance gains, not just faster screen redraws. The Rocket 33 races along at 33MHz and has a floating point microprocessor. Mac II performance will increase by up to eight times. (#4779, Radius)

Minimum requirements: NuBus-based Mac II, 2MB RAM, System 6.0.7, a hard drive, RocketShare for Duo or IIx.



**\$198.**



## Claris Works 2.0

This seamlessly integrated program includes word processing, graphics, spreadsheet, charting, database, and communications modules in one package. Features include a dictionary, thesaurus, text and graphics rotation, import/export of popular file formats, mail merge, and true WYSIWYG display. Online help answers your questions as you work. (#6144, Claris)

Minimum requirements: 2MB RAM, a hard drive.

**\$84.**



## In Control 2.0

This is the new version of the 1992 Eddy Award winner. It's the only To-Do list manager that lets you organize all your activities in an outline, a prioritized list, and on your calendar. So you choose what works best for you. Includes FREE DynoPage Lite which prints pages for Day-Timers, Day Runners, and other organizers. (#5660, Attain)

Minimum requirements: Mac Plus, 600K RAM, System 6.0.5.

**\$99.**



## TimesTwo

Expand your disk capacity as much as 100 percent in minutes. TimesTwo transparently compresses disk blocks, not files. So when you move a file from your TimesTwo hard disk to another device, it arrives in its original form. It's compatible with all Mac software and works with all SCSI disks. (#5233, Golden Triangle)

Minimum requirements: SE/30, 2MB RAM, System 6.0.4.

Get a SyQuest Cartridge for only \$60 with the purchase of TimesTwo. (#2269, limit 5)

**\$468.**



## Microsoft Office CD-ROM

Get the full versions of the latest Microsoft Word, Excel, PowerPoint, and Mail for over \$1000 less than if you purchased them separately. All are full of great features like drag-and-drop editing, customizable Toolbars, keyboard shortcuts, spell-checking, and much more. And PowerPoint presentations cross platforms without translation. (#5688, Microsoft)

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.5, CD-ROM drive.

**\$68.**



## Apple Font Pack

This is a carefully chosen selection of 43 TrueType fonts. They're expertly crafted to provide excellent results - maximum legibility on screen and crisp output on paper. The Apple Font Pack includes new display, text, and symbol faces to give you a wide range of type choices. Ask about the \$15 rebate when you buy this and System 7. (#5248, Apple Computer)

Minimum requirements: Mac Plus, System 7.0, a hard disk.



**\$98.**



## Aldus IntelliDraw Competitive Upgrade

Move to IntelliDraw from any other drawing software. Aldus IntelliDraw defines a new category of drawing program with intelligent features that give you an easy way to visually experiment, refine, and draw your ideas. Innovative smart tools link graphics in your drawing so they respond to changes automatically. Create visual "what-if" scenarios with features like intelligent clip art and dimension lines. Auto-alignment, shape blending, arrows and dashes, powerful text handling capabilities, unlimited layers, color gradients, easy object animation, slide show mode, and standard draw tools are a few of the features. It also shares files seamlessly between Mac and Windows versions. (#6191, Aldus)

Minimum requirements: Mac Plus, 2MB, System 6.0.5, 4MB RAM under System 7.



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## WordPerfect for Macintosh Competitive Trade-Up

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Minimum requirements: Mac Plus, 1MB RAM, System 6.0.3.

\$278. WordPerfect 2.1.3 (#4111)



**\$94.**

## Helix Express Competitive Upgrade

Manage everything from personal contacts, time and billing, mailing lists, documents - even your whole business with this fantastic value. Upgrade from any database program. Document features let you store and search for a document by a key word, then retrieve and launch it in its native format. (#6207, Helix Technologies)

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.5.

**\$224.**

## DeBabelizer

This graphics processing toolbox will save you lots of time, effort, and money. It translates from and to over 40 bit-mapped graphic file and animation formats for Mac, DOS, Windows, Silicon Graphics, Sun Microsystems, Amiga, and others. You can even edit images without the creating software. Batch processing and internal scripting functions save time by automating repetitive manipulation and editing tasks. Create QuickTime blue-screen effects with background removal features. A catalog feature lets you automatically place a series of images onto a single page. DeBabelizer will also report and display differences between original and revised images. (#6193, Equilibrium)

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.5.

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THE GRAPHICS PROCESSING TOOLBOX



**\$79.**

## Kai's Power Tools

Get 33 powerful generators and filter plug-ins for Adobe Photoshop, Fractal Design Painter, and others. Includes the Gradient Designer, Texture Explorer, Gradients on a Path, and four Fractal Generators. "A landmark plug-in for Adobe Photoshop...together a creative explosion!", says Jeff Parker, Adobe Photoshop Product Manager. (#5854, HSC Software)

Minimum requirements: SE, 4MB RAM, System 6.0.5, 4MB free hard disk space, 32-bit QuickDraw.



**\$88. each**

## Vintage Photo CDs

Vintage Quality Photographic Images on CD-ROM are albums of 300 images, each color corrected and ready for separation. When you buy an album, the images are yours to use completely royalty free. View the images of business, industry, leisure, and landscapes quickly with the interface. Four albums are available: Medley, Mosaic, All & Sundry, and Mélange. (Seattle Support Group)

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.2, CD-ROM drive.

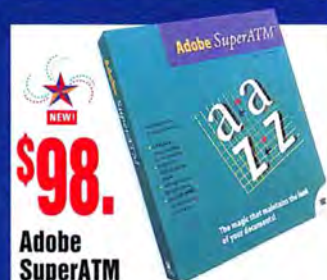


**\$398.**

## Sketcher/ArtZ Bundle

Create realistic natural-media effects with Sketcher. Use brushes, pens, chalks, paper textures, and image processing tools to create or retouch gray scale images. The ArtZ 6x8 ADB tablet is a graphical input device on which you use the stylus as if it were a pen or brush. The stylus is cordless, batteryless, and detects 120 levels of pressure. (#6070/5355, Fractal Design Corp./Wacom Technology)

Minimum requirements: SE/30, 2MB RAM, System 6.0.5, 32-bit QuickDraw built into ROM.



**\$98.**

## Adobe SuperATM

Eliminate jagged type on-screen and on paper. SuperATM also simulates different type styles on Macs running the same applications. This new "font substitution" feature lets you share, view, edit, or print files, and retain the typographic character and texture of the original, even if your Mac doesn't have the actual fonts. Includes five typefaces. (#6044, Adobe)

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.2, 4MB RAM under System 7, a hard disk and one floppy drive, a printer.

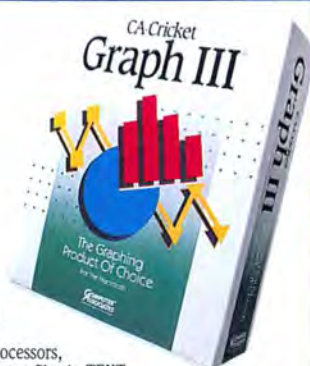
\$49. SuperATM Upgrade (#6045)

**\$118.**

## Cricket Graph III

Convert text or data into a complete, professional-looking graph in seconds. Editing graphs is easy too - just double-click a graph component or other object, make your changes in the dialog box that appears, and view the results immediately. Import and graph data from word processors, databases, spreadsheets, or any program that produces files in TEXT, SYLK, JWKS, or WKS formats. Choose from scatter, line, stacked bar, pie, column, text, area, stacked column, double Y axes, bar, polar, quality control and overlay combinations. Customize graphs with 16 bar patterns, 48 plot symbols, six line styles, and five line widths. (#5001, Computer Associates)

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.7, hard drive or second floppy drive, 2.5MB RAM under System 7.



**\$149.**

## Environmental Clip Art

These 200 EPS images depict environmental issues such as recycling and pollution. They range from simple to complex illustrations which can be separated into more than 400 self-standing images. Add color, resize, or reshape them using any of the major applications that support the EPS format like PageMaker, Persuasion, Word, and more. (#6189, ARRO International)

Minimum requirements: A hard disk.



**\$358.**

## ACCURA 144+ Fax 144

Everything you need to send and receive data and Group 3 faxes is here. It's a V.32bis, 14,400 bps fax/data modem which also supports 9600, 2400, 1200, and 300 bps data, plus V.42/V.42bis and MNP 5 error-control and data compression. Get up to 57,000bps throughput with V.42bis. Includes cables and fax software. (#6068, Hayes)

Minimum requirements: Mac Plus, 1MB RAM.



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Minimum requirements: PB 100, System 7.0.



**\$49.**

## DynoDex 3.0/ PowerBook T-shirt Bundle

This award-winning address book manager is perfect for your PowerBook. Enter information quickly. Print labels, envelopes, rotary cards, and address books for most popular personal organizers. DynoDex 3.0 synchronizes files and can dial phone numbers automatically. And you get our great PowerBook T-shirt FREE while supplies last. (#5477/6190, Portfolio Software/Mac's Place)

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.4.



**\$318.**

## PowerBook 165c 6MB RAM

Users who want to take full advantage of the 165c's color capabilities need extra memory. These new memory modules use the Apple-specified pseudo-static RAM chips to maintain the speed and warranty of your PowerBook. Extra memory will allow you to simultaneously run multiple applications such as QuickTime editing software as well as photo retouching software. Newer Technology specializes in low power consumption PowerBook memory with a card for every PowerBook, old or new. They are easy to install and were designed with all-important battery life in mind. (Module may not look exactly as shown.) (#6203, Newer Technology)

\$558. PowerBook 165c 10MB RAM (#6205)

Newer

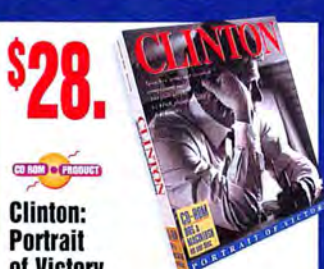


**\$92.**

## PB Tools/InLine Sync/ Tesseract Bundle

PBTools gives you more power, without the fluff. Know exactly how much battery life remains, and sleep your system to conserve it. Password-protection secures your PowerBook, and HotKey functions stretch keyboard power. InLine Sync updates files on your PowerBook and desktop Mac to the latest versions. Sync via file sharing, network, or SCSI connection. Tesseract has a simple but challenging premise - clear the board of colored tiles by jumping one over another in as few moves as possible. When only one tile remains on the board, a different, more difficult arrangement appears. Animated on-line help illustrates possible moves. (#6051, InLine Design)

Minimum requirement: Mac Plus, 2MB RAM, System 7.



**\$28.**

## Clinton: Portrait of Victory

Audio speeches, music, narration, and QuickTime video complement nearly 300 photographs by award-winning TIME photojournalist P.F. Bentley. This multimedia CD-ROM is an intimate look at the Clinton campaign from the primaries, through the scandals, to the victory. Includes an epilogue by TIME chief political correspondent Michael Kramer. (#6201, Warner New Media)

Minimum requirements: Any Mac with a 13" color monitor, 4MB RAM, System 6.0.7, CD-ROM drive.



**\$45.**

## Spectre Supreme

Jump into a 3-D tank in a cyberpunk battle world. Landscapes and scenery burst across the screen in near-movie quality animation. Face enemies like smart acid pools, cloaked robots, and deadly orbiter gauntlets. Fight back with smart missiles, proximity mines, and spinners. QuickTime and high-quality digitized sounds elevate the intensity. (#5951, Velocity)

Minimum requirements: SE, 4MB RAM, System 6.0.7.



**\$48.**

## Battle Chess Enhanced CD-ROM

"Every chess player will want a copy of this program. Highly recommended." - Computer Gaming World. This CD-ROM brings the game to life with a magnificent chess logic system dramatic three-dimensional animations, a musical score, superb sound effects, and a complete talking tutorial. Includes modem capability for long-distance games and ten levels of play. (#6202, Interplay)

Minimum requirements: CD-ROM drive.



**\$48.**

## CD-ROM Toolkit

This utility replaces your CD-ROM drive's original software, transparently speeding up CD-ROM operations up to 1000 percent, improving compatibility, and allowing you to play audio CDs. There are no boards, cables, or cards to install. The CD-ROM ToolKit transparently caches CD-ROM information to your hard disk so mounting, folder opening, seeks, and searches happen instantly. (#5731, FWB)

Minimum requirements: Mac Plus, 1MB RAM, System 6.0.4, CD-ROM drive.



**\$698.**

## TransTalk

Buy two and get a \$100 rebate from Transware. TransTalk connects local networks anywhere in the world to create wide area networks (WANs). It enables full network-to-network connections, so all users can easily share all network service. TransTalk cuts the time and cost of network connections in half with built-in DMA, and real-time compression and decompression of AppleTalk communications. Get multiple levels of network protection: passwords, zone and laser printing hiding, and dial-back security - all features exclusive to TransTalk. TransTalk offers full support of both asynchronous and synchronous communications, so it can be used with modems as well as high-speed digital connections. (#6192, Transware)

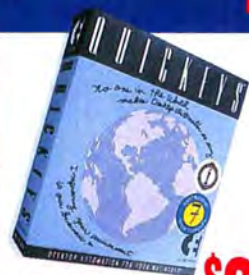
Minimum requirements: Two TransTalk.



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## QuickKeys

QuickKeys is the ultimate desktop automation tool, designed to improve your desktop environment. It's easy to create and use hundreds of time-saving shortcuts. Any repetitive task you perform on your Mac can be done more easily and consistently with QuickKeys. Supplies are limited at this price. (#3388, CE Software)

Minimum requirements: Mac Plus, 1MB RAM, System 6.0.2.

**\$38.**

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## Square One

Store all of your favorite files in an easy-to-use icon palette. To access a file, just double click on its icon. To switch between running applications, just click the Active Applications palette once. No more time wasted rummaging through your hard drive, and no goofy hierarchical menus. Just point and click with Square One. (#5180, Binary)

Minimum requirements: Plus, 2MB RAM, System 7.

**\$54.**



## In Touch

Try this easy-to-use contact and time organizer. Easily group, sort, and list your contacts, auto-dial, and take extensive notes. Print envelopes, labels, address books, fax cover sheets, and daily calendars. Includes the highly acclaimed Snap utility which instantly finds and pastes addresses, and prints envelopes from within any application. (#5908, Advanced Software)

Minimum requirements: Mac Plus, 2MB RAM, System 6.0, hard disk.

**\$31.**



## Icon Gallery

Jazz up your System 7 desktop with Icon Gallery, the Mac world's largest color icon collection. More than 850 itty bitty icon masterpieces will add pizzazz and personality to any document. You don't have to be an artist, just select "get info" and then paste. Also works great in gray scale. (#5519, Component Software)

Minimum requirements: Mac Plus, 2MB RAM, System 7, 8-bit or gray scale monitor minimum recommended.



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## Smart Label Printer Pro

Produces fast, high-resolution, laser-quality output on multiple label sizes. Using Seiko Instruments' latest and most advanced thermal print engine, the Pro can print text, POSTNET, bar codes, even photo-like graphics from digital images. Print labels for envelopes, file folders, ID badges, diskettes, binders, and more. (#6154, Seiko Instruments)

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## Bose RoomMate Speaker

The Bose RoomMate Computer Monitor provides room-filling sound for your computer system. Bose, the world leader in innovative audio products, offers advanced audio performance for presentations and desktop use. Distortion-limiting circuitry ensure lifelike sound at virtually any listening level. Active equalization delivers full rich bass, balanced midrange, and crisp clear highs. And magnetic shielding prevents interference with your video monitor and storage media. The RoomMate connects directly to your CD-ROM audio output or computer earphone jack, and includes connectors for both stereo and mono systems. While it requires minimal desk space, optional mounting accessories can position it up off your desk. (#6197, Bose Corporation)

\$699. Powered Acoustimass-3 Series II Speakers (6198)

**\$79.**



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Prevent disastrous system "crashes" with Help! It pinpoints system configuration problems and recommends solutions that anyone can understand. Analyzes your Mac for conflicts, incompatibilities, improperly installed files, memory problems, damaged files, and more. It's like having a Mac expert on call 24 hours a day. (#4086, Teknosys)

Minimum requirements: Mac Plus, 1MB RAM, System 6.0, hard drive.

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**\$38.**

## Safe & Sound

Keep your Mac up and running. This utility automatically diagnoses and repairs the 100 most common disk problems – like when your system is having trouble starting; recognizing or reading disks; opening, closing, or trashing folders; or launching applications. Safe & Sound checks for disk problems, scans for the most common viruses, and offers an instant fix. Safe & Sound is based on Central Point MacTools – the highest-rated complete disk repair and data recovery product available for the Mac. This is the technology the pros turn to first. Best of all it's quick and easy. No technical experience is required. (#6199, Central Point Software)

Minimum requirements: Mac Plus, 2MB RAM, System 6.0.5.





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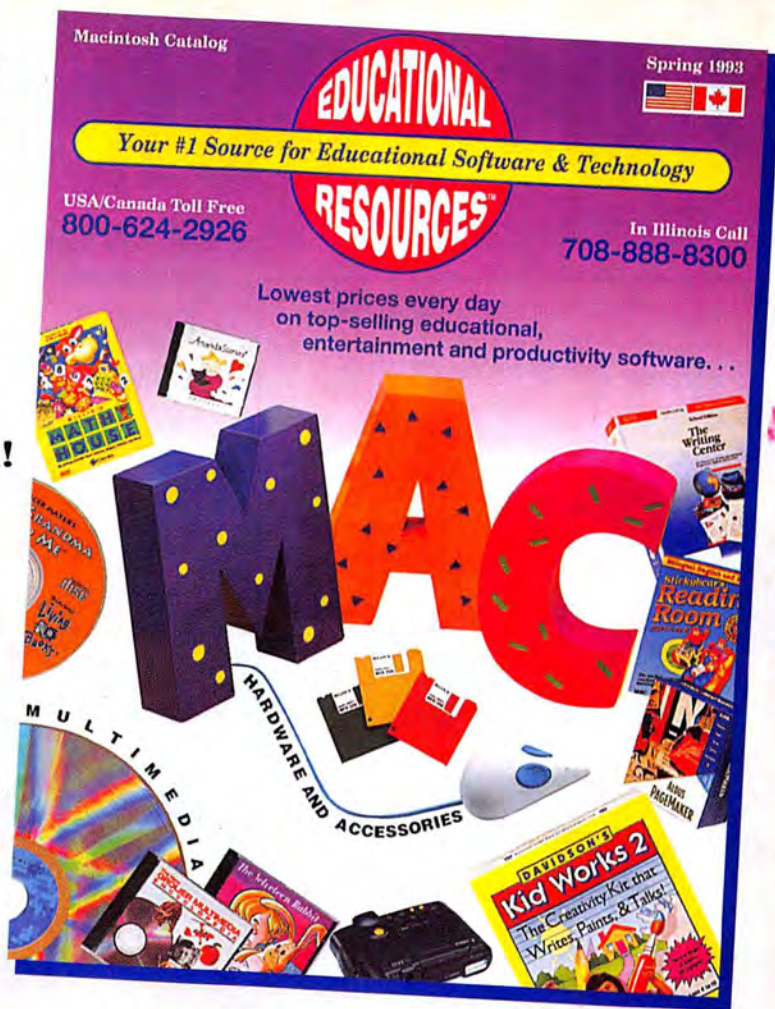
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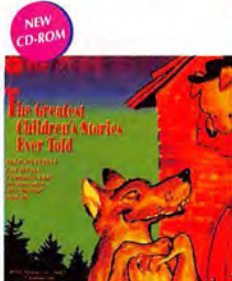
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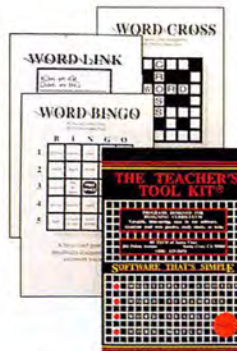
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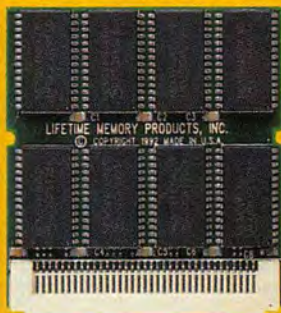
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Virtual 3.0	139
LC Video-RAM 512K	50
Quadra Video RAM (256K-80ns)	31
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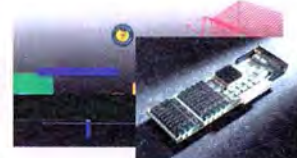
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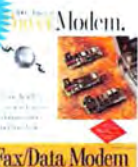


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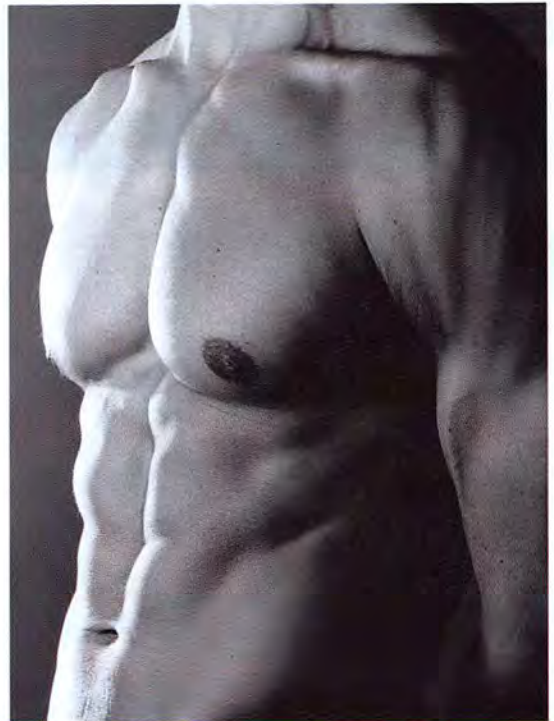
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LPS 105mb	10ms	3.5"TH	\$239	\$299
LPS 120mb	10ms	3.5"TH	\$279	\$339
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Pro 700mb	10ms	3.5"HH	\$1179	\$1239
Pro 1.05gb	10ms	3.5"HH	\$1339	\$1399
Pro 1.22gb	10ms	3.5"HH	\$1499	\$1559
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### TEAC

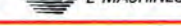
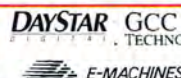
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1 PDS	1 PDS	1 PDS	1 PDS	DOCK CONNECTOR	DOCK CONNECTOR	1 PDS	1 PDS	1 PDS 3 NUBUS	1 PDS	1 PDS 3 NUBUS	1 PDS 3 NUBUS	1 PDS 5 NUBUS



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# BOTTOM LINE

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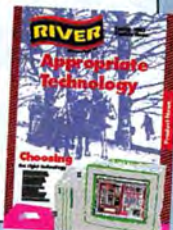
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44mb Cartridge \$63  
88mb Cartridge \$97

## Quantum



Unformatted Capacity Model Average Access Actual MAC Capacity Internal External

### GO-DRIVE SERIES (2.5" HARD DRIVES DESIGNED FOR NOTEBOOKS)

80mb GO-80 17ms 80mb \$299 \$399  
120mb GO-120 17ms 120mb \$389 \$489

### ELS SERIES (3.5" LOW PROFILE AND LOW POWER)

42mb ELS42 19ms 40mb \$175 \$235  
85mb ELS85 17ms 82mb \$199 \$259  
127mb ELS127 17ms 124mb \$255 \$315  
170mb ELS170 17ms 160mb \$279 \$339

### LPS SERIES (3.5" LOW PROFILE)

120mb LPS105 10ms 116mb \$215 \$275  
240mb LPS240 10ms 234mb \$369 \$429  
525mb LPS525 10ms 525mb \$899 \$959

### PRODRIVE SERIES (3.5" HALF HEIGHT)

425mb PRO425 9ms 406mb \$850 \$939  
700mb PRO700 10ms 700mb \$1195 \$1255  
1.0GIG PRO1050 10ms 1001mb \$1329 \$1389  
1.2GIG PRO1225 10ms 1165mb \$1479 \$1539

ELS, LPS, PRO drives carry a TWO Year Warranty. Go-Drives carry a ONE Year Warranty.

## CONNER

Unformatted Capacity Model Description Average Access Actual MAC Capacity Internal External

85mb CP30080E 3.5" Low Profile 17ms 82 mb \$199 \$259  
170mb CP30170E 3.5" Low Profile 17ms 160 mb \$279 \$339  
212mb CP30200 3.5" Low Profile 12ms 206 mb \$369 \$429  
540mb CP30540 3.5" Low Profile 10ms 515 mb \$897 \$957

Conner drives carry a ONE Year Warranty.

## Maxtor

\*6300 RPM



Unformatted Capacity Model Average Access Actual MAC Capacity Internal External

### XT SERIES (3.5" LOW PROFILE)

120mb 7120XT 15ms 121mb \$225 \$285  
207mb 7213 15ms 202mb \$329 \$389

### LXT AND MXT SERIES (3.5" HALF HEIGHT)

330mb LXT-340 15ms 324mb \$579 \$639  
535mb\* MXT-535 8.5ms 521mb \$949 \$1009  
1240mb\* MXT-1240 8.5ms 1150mb \$1499 \$1559

### PANTHER SERIES (5.25" FULL HEIGHT)

1.2GIG PO-12S 13ms 997mb \$1295 \$1395  
1.7GIG PO-17S 13ms 1433mb \$1595 \$1695

Maxtor 3.5" Drives carry a ONE Year Warranty. Maxtor 5.25" Drives carry a TWO Year Warranty.

## Seagate

FEATURING...  
THE ELITE SERIES



Unformatted Capacity Model Description Average Access Actual MAC Capacity Internal External

1.6GIG ST41651N 5.25" Full Ht Wren-8 15ms 1350mb \$1679 \$1779  
2.1GIG ST42100N 5.25" Full Ht Wren-9 12.9ms 1900mb \$1869 \$1969  
1.6GIG ST41600N 5.25" Full Ht Elite-1 11.5ms 1307mb \$1839 \$1939  
2.4GIG ST42400N 5.25" Full Ht Elite-2 11ms 2050mb \$2539 \$2639  
3.4GIG ST43400N 5.25" Full Ht Elite-3 11ms 2750mb \$3419 \$3519

Seagate Drives carry a ONE Year Warranty.

## FUJITSU

FIVE  
YEAR  
WARRANTY



Unformatted Capacity Model Description Average Access Actual MAC Capacity Internal External

425mb M2623SA 3.5" Half Height 9ms 405mb \$839 \$899  
520mb M2624SA 3.5" Half Height 9ms 496mb \$889 \$949  
1.1GIG M2694 3.5" Half Height 8.5ms 995mb \$1549 \$1609  
1.2GIG M2266 5.25" Full Height 14.5ms 1029mb \$1289 \$1389  
2.0GIG M2652 5.25" Full Height 14.5ms 1600mb \$2249 \$2549  
2.4GIG M2654 5.25" Full Height 11.5ms 2000mb \$2499 \$2599

## ClubMac TAPE BACKUP Systems

Capacity Model Description Media Internal External

155mb Teac MT2ST/N50 Analog CT600N \$429 \$449  
600mb Teac MT2ST/F50 Analog CT600F \$629 \$649  
2.0GIG Archive Python DAT, DDS 4mm \$1165 \$1185  
3-5GIG Archive Turbo DAT DAT, DDS-DC 4mm \$1249 \$1269  
2.0GIG HP 35470A DAT, DDS 4mm \$1329 \$1349  
3-5GIG HP 35480A DAT, DDS-DC 4mm \$1529 \$1549

Includes Retrospect v.2.0 Backup Software, One Tape and ONE Year Warranty

NOW SHIPPING with RETROSPECT V.2.0

## ClubMac OPTICAL Drives

Model Capacity Description Seek Internal External

CMO-OD3000 Teac 128mb 3.5" Half Ht 45ms \$949 \$989  
CMO-3100E Ricoh 128mb 3.5" Half Ht 45ms \$1035 \$1075  
CMO-JY750 Sharp 594/652MB 5.25" Half Ht 40ms \$2255 \$2295  
CMO-3051E Ricoh 594/652mb 5.25" Full Ht 28ms \$2345  
CMO-TAHITI II MaxOptix 650/1.0GIG 5.25" Full Ht 35ms \$3195  
128mb Cartridge 3.5" Single Sided \$39  
594/652mb Cartridge 5.25" - 512/1024 bytes/sec \$99

All ClubMac Opticals include ONE cartridge and ONE Year Warranty.



1-800-258-2622

1-800-CLUBMAC

1-800-258-2622

## ACCELERATOR

### APPLIED ENGINEERING

MAC II, IIX, IIFX, IICI, IISI (NUBUS).	
PERFORMA 600	W/O FPU W/ FPU
TRANSWARP 040 25MHZ	\$1799
TRANSWARP 040 33MHZ	\$2429
MAC IICI - CACHE IN	
TRANSWARP CI-50 (030-50MHZ)	\$739 \$879
LC, LCII, PERFORMA 400, COLOR CLASSIC	
TRANSWARP 4325 (030 25MHZ)	\$CALL \$CALL
TRANSWARP 4333V (030 33MHZ)	\$CALL \$CALL
TRANSWARP 4340 (030-40MHZ)	\$CALL \$CALL
MAC SE / CLASSIC	
TRANSWARP 030 16MHZ	\$319 \$399
TRANSWARP 030 40MHZ	\$599 \$729

### DAYSTAR DIGITAL

#### POWERCACHE

33 MHZ TURBO 040	\$1345
FASTCACHE FOR TURBO 040	\$335
CHARGER FOR PHOTOSHOP	\$759
33 MHZ POWERCACHE*	\$375 \$465
40 MHZ POWERCACHE*	\$545 \$635
50 MHZ POWERCACHE*	\$715 \$845
EQUALIZER LC	\$169 \$239
POWERCACHE ADAPTER	\$41

\*POWERCACHE ADAPTER NOT INCLUDED, COMPATIBLE WITH CLASSIC, SE, LC, SE30, II, IIX, IICX, IISI, IICI, PERFORMA

#### CACHE CARDS

FASTCACHE IISI / IISI WITH FPU	\$279/349
FASTCACHE IICI	\$199
FASTCACHE QUADRA - Q700/900	\$249
FASTCACHE QUADRA - Q700/900/950	\$375

#### EXPANSION BOARDS

DUALPORT IISI	\$165
POWERMATH LC	\$115

### RADIUS

ROCKET 251 NEW LOW PRICE!!	\$1049
ROCKET 33	\$1949

SCSI-2 BOOSTER / ROCKETSHARE	\$249/399
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### SUPERMAC

THUNDERSTORM	\$815
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CALL FOR MORE SUPERMAC PRODUCTS

### TECHWORKS

#### CACHE CARDS

MAC IICI 64K	\$179
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#### MAC SE

25MHZ 030 ACCELERATOR	\$419 \$459
40MHZ 030 ACCELERATOR	\$469 \$549

#### MAC CLASSIC

25MHZ 030 ACCELERATOR	\$429 \$529
40MHZ 030 ACCELERATOR	\$459 \$589

#### MAC LC & LCII

25MHZ 040 ACCELERATOR	\$769
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#### MAC NUBUS

25MHZ 040 ACCELERATOR	\$1399
33MHZ 040 ACCELERATOR	\$1699
MAC IISI WITH PASS THRU PDS	\$149 \$215

## FAX MODEMS

### GLOBAL VILLAGE

POWERPORT (INTERNAL POWERBOOK FAX MODEM)	
BRONZE (24/96 S/R FAX MODEM)	\$179
SILVER (96/96 S/R FAX MODEM)	\$359
GOLD (14/400 S/R FAX MODEM)	\$419

TELEPORT (EXTERNAL DESKTOP FAX MODEM)	
BRONZE (24/96 S/R FAX MODEM)	\$189
SILVER (96/96 S/R FAX MODEM)	\$359
GOLD (14/400 S/R FAX MODEM)	\$419

### PSI

POWERMODEM I (24/96/48 S/R FAX MODEM)	\$129
POWERMODEM II (24/96/96 S/R FAX MODEM)	\$225
POWERMODEM III (96/96 S/R FAX MODEM)	\$325
POWERMODEM IV (14/4144 S/R FAX MODEM)	\$419

COMSTATION I / COMSTATION V	\$135 / 429
COMSTATION NETWORK (WITH SW)	\$159

### PJCEON

14.4 INTERNAL PWRBK FAX MODEM	\$299
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### SUPRA TECHNOLOGY

SUPRAFAXMODEM V.32 WITH SOFTWARE	\$289
SUPRAFAXMODEM V.32 STANDALONE	\$239
SUPRAFAXMODEM V.32 BIS WITH SOFTWARE	\$349
SUPRAFAXMODEM V.32 BIS STANDALONE	\$299

### US ROBOTICS

MAC & FAX 14.4 FAX / DATA MODEM	\$249
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## MEMORY

MEMORY PRICES CHANGE FREQUENTLY,  
CALL FOR CURRENT PRICES

### STANDARD MAC

1MB / 2MB / 4MB X 8 SIMMS	\$32 / 67 / 129
4MB WITH PAL SIMMS	\$139
8MB SIMMS / 8MB SIMMS FOR Q700	\$289/299
16MB SIMMS OR 16MB LOW PROFILE	\$585

### MICRO

1MB X 8 SIMMS / 4MB X 8 SIMMS	\$34 / 129
8MB SIMMS / 16MB SIMMS	\$299 / 599
CENTRIS 610/650/LCIII	
4MB / 8MB / 16MB	\$149 / 299 / 615
256K VRAM	\$22

### QUADRA 800

4MB / 8MB / 16MB	\$179 / 339 / 685
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### VIDEO RAM

256K VRAM FOR QUADRAS	\$22
512K VRAM FOR LC, LCII, IIVX	\$49

### POWERBOOK 140/145/170

6MB MEMORY MODULE	\$210
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### POWERBOOK 160/180

4MB / 6MB MEMORY MODULE	\$169 / 245
8MB / 10 MB MEMORY MODULE	\$325 / 419

### DUO 210/230

4MB / 8 MB MEMORY MODULE	\$229 / 345
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### NEC SILENTWRITER

2MB MEMORY UPGRADE	\$99
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## MONITORS & VIDEO CARDS

Le Rivers	
24XP CARD AND A 15" OR 17" MULTISYNC MONITOR	

GET A \$100 REBATE WHEN YOU BUY THE NEC MACFG 24XP CARD AND A 15" OR 17" MULTISYNC MONITOR	
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### COLOR MONITORS

15" MULTISYNC 3FGX	\$609
15" MULTISYNC 4FG (ACCUCOLOR)	\$729

17" MULTISYNC 5FG (ACCUCOLOR)	\$1299
21" MULTISYNC 6FG (ACCUCOLOR)	\$2349

### COLOR DISPLAY INTERFACE CARDS

MACFG 24XP	\$495
MACFG 24X / 8X	\$1199 / 639

### RADIUS

#### MONITORS

COLOR DISPLAY/21	\$2319
PRECISIONCOLOR PIVOT	\$935

PRECISIONCOLOR 20 OR 20/S	\$2319
PRECISIONCOLOR/19	\$2029

FULL PG DISPLAY / MONO PIVOT	\$569 / 699
2-PG DISPLAY/19	\$879

2-PG DISPLAY/21 / 21E	\$1149 / 1299
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#### VIDEO CARDS

PRECISIONCOLOR 8XJ	\$489
PRECISIONCOLOR 24X	\$1629

PRECISIONCOLOR 24XP / 24XK	\$489 / 819
UNIVERSALCOLOR 24-SMALL	\$499

UNIVERSALCOLOR 24-LARGE	\$839
COLOR PIVOT / MONO PIVOT	\$499 / 249

2-PG / FULL PG DISPLAY	\$375 / 189
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### POWERVIEW

#### MONITORS

21" COLOR (2168)	\$2519
20 MULTIMODE COLOR (2085H)	\$1299

20T MULTISCAN TRINITRON (2075M)	\$2139
21" MONO/GS (2110)	\$999

15" MONO/GS PORTRAIT (1510)	\$499
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#### VIDEO CARDS

FASTEROPS 24XLI	\$1889
FASTEROPS 24SX	\$619

PAINTBOARD 24 / LI	\$1449 / 815
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### SUPERMAC

#### MONITORS

SUPERMATCH 21 TWO-PAGE (9771)	\$2449
SUPERMATCH 20-T MULTIMODE	\$2449

SUPERMATCH 20 COLOR (9782)	\$1479
SUPERMATCH 17-T (9735)	\$1049
PLATINUM 21 2-PG DISPLAY (9761)	\$989

#### VIDEO CARDS

SPECTRUM/24 SERIES IV	\$815
SPECTRUM/24 PDQ PLUS	\$1515
SPECTRUM/24 PDQ NUBUS OR IISI	\$815

## MISCELLANEOUS

CLUBMAC PHONENET CONNECTOR	\$14
CLUBMAC EXTENDED KEYBOARD	\$79
EXT. HALF HT CABINET WITH CABLES	\$75
EXT. FULL HT CABINET WITH CABLES	\$125
EXT. DUO BAY WITH CABLES	\$125
EXT. 2.5" ENCLOSURE WITH CABLES	\$99
HARD DRIVE BRACKETS	\$19
25-50 OR 50-50 SCSI CABLE	\$10
HDI 30 - 50 PIN CABLE	\$35
HDI 30 - DB 25 CABLE	\$30
EXTERNAL TERMINATOR	\$7.50

## MULTIMEDIA & CD-ROMS

### KODAK'S MULTISESSION PHOTO CD COMPLIANT

MULTISPIN CDR-74	\$619
280ms access times	
SCSI-2 compatible	
256k cache	
MultiSpin Technology	
Two Year Warranty	

NEC MULTISPIN CDR-74	\$619
NEC MULTIMEDIA GALLERY	\$799
NEC CD EXPRESS. FREE CD OFFER	\$349
NEC MULTISPIN CDR-38	\$479

### RADIUS

VIDEOVISION (BASIC SYSTEM)	\$1625
VIDEOVISION (PRESENTATION)	\$1929

(PRESENTATION PACKAGE INCLUDES ADOBE PREMIERE 2.0)

### RASTEROPS

RASTEROPS 24XLTV	\$2639
MOVIEPAK	\$1499

MEDIA TIME / VIDEOTIME	\$1499 / 1135
RASTEROPS 24STV	\$729

PHOTOPRO NUBUS	\$589
VIDEO EXPANDER NTSC	\$529

### SUPERMAC

VIDEOSPIGOT NUBUS* / IISI*	\$369 / 329
SPIGOT & SOUND NUBUS*	\$479

VIDEOSPIGOT PRO NUBUS**	\$1069
VIDEOSPIGOT IISI**	\$1229

SPIGOT & SOUND PRO NUBUS**	\$1069
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*FREE ADOBE PREMIERE 2.0 LE	
**FREE ADOBE PREMIERE 2.0 FULL VERSION	

### TOSHIBA

TOSHIBA CD ROM	\$719
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## NETWORKING

### ASANTE

MAC SE (68000 PDS)	
THK/THN/10BT, 32K	\$199
THK/10BT, 32K	\$149

SCSI PRODUCTS	
10BT, INCL SCSI CABLE	\$239
SCSI CABLE-HPD30 & DB25 FOR PWRBK	\$45

FRIENDLYNET ADAPTERS	
THN FRIENDLYNET MEDIA ADAPTER	\$79
THK FRIENDLYNET MEDIA ADAPTER	\$79

10BT FRIENDLYNET MEDIA ADAPTER	\$79
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IOBASET HUBS	
10BT HUB W/12 THK, THK&THN PORT	\$479
12-PORT SMART HUB W/SMNP HW	\$899

ETHERTALK TO LOCALTALK	
ASANTEPRINT, THK/THN	\$319
ASANTEPRINT, THK/10BT	\$319

MAC II FAMILY, PERFORMA 600 (NUBUS)	
THK/THN/10BT, 64K	\$199
THK/THN, 64K	\$149

THK/10T, 64K	\$149
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MAC IISI & SE/30 (030 PDS)	
THK/THN/10T, 64K, FPU SOCKET	\$199
THK/THN, 64K, FPU SOCKET	\$149

THK/THN, 64K, FPU CHIP	\$245
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LC, LCII & PERFORMA 400 (020, 030 PDS)	
THN/10BT, FPU SOCKET	\$199
10T, FPU SOCKET	\$149

10BT, FPU CHIP	\$245
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WARRANTIES: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. Money Back Guarantee: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. Returns: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. ALL PRODUCT INFORMATION AND PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.	
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## PRINTERS

### GCC

PLP II	\$799
BLP ELITE (4 PPM)	\$1149
WIDEWRITER 360	\$1429
WRITE MOVE II	\$479
WRITE IMPACT (24-PIN)	\$499



\$250 REBATE FROM NEC\*

SILENTWRITER 95F	\$1119*
SILENTWRITER 97	\$1499*
SILENTWRITER 95FX (BUILT-IN PS FAX)	\$1469*
SILENTWRITER 97FX (BUILT-IN PS FAX)	\$1809*

\*AFTER MANUFACTURERS \$250.00 REBATE



BUY AN AUTO DOC FEEDER & GET UP TO \$100 FROM HP OFFER EXP. 4/30/93

HP SCANJET IIC COLOR SCANNER	\$1295
TRUE 400 DPI (800 DPI VIA INTERPOLATION) SINGLE PASS SCANNING, UP TO 16.7 MILLION COLORS	
ENHANCED DESKSCAN II SOFTWARE	
BUNDLED WITH ADOBE PHOTOSHOP LE	

HP SCANJET IIP GRAYSCALE SCANNER	\$695
300 DPI (600 DPI VIA INTERPOLATION) SINGLE PASS SCANNING, 256 SHADES OF GRAY	
COLORSYNC COMPLIANT	
ENHANCED DESKSCAN II SOFTWARE	

HEWLETT PACKARD SCANNER OPTIONS	
AUTO DOC FEEDER FOR HP SJ IIC	\$499
AUTO DOC FEEDER FOR HP SJ IIP	\$279

ScanTastic (PHOTOSHOP PLUG-IN)	\$69
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## SCANNERS

### EPSON

ES-800C COLOR SCANNER	\$1399
ES-800C (SOFTWARE NOT INCLUDED)	\$1119

ES-600C COLOR SCANNER	\$1149
ES-600C (SOFTWARE NOT INCLUDED)	\$859

AUTOMATIC DOCUMENT FEEDER	\$465
TRANSPARENCY UNIT	\$765

ScanTastic (PHOTOSHOP
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ALL MAGIC DRIVES INCLUDE  
A 1, 2, 3, OR 5-YEAR  
WARRANTY & A 30-DAY  
MONEY-BACK GUARANTEE.

MACPRODUCTS HAS BEEN  
CONTINUOUSLY SHIPPING  
MACINTOSH DRIVES LONGER  
THAN ANY OTHER COMPANY!

ALL MAGIC EXTERNAL  
DRIVES INCLUDE CASE WITH  
40-WATT UNIVERSAL POWER  
SUPPLY, MAC CABLES, AND  
ANUBIS™ DRIVER SOFTWARE

## LEASE

LEASE A COMPLETE  
MACINTOSH SYSTEM AT  
AFFORDABLE RATES.  
CALL FOR DETAILS.



- <sup>1</sup> 1 Year Warranty
- <sup>2</sup> 2 Year Warranty
- <sup>3</sup> 3 Year Warranty
- <sup>5</sup> 5 Year Warranty



### MAGIC HARD DRIVES

85MB Quantum ELS <sup>2</sup>	\$219
127MB Quantum ELS <sup>2</sup>	\$259
170MB Quantum ELS <sup>2</sup>	\$319
240MB Quantum Pro <sup>2</sup>	\$369
525MB Quantum Pro <sup>2</sup>	\$949
1.2GB Quantum Pro <sup>2</sup>	\$1399
80MB Quantum Go PowerBook <sup>1</sup>	\$299
120MB Quantum Go PowerBook <sup>1</sup>	\$359
200MB Toshiba PowerBook <sup>1</sup>	\$599
1.2GB Fujitsu <sup>5</sup>	\$1395
2.1GB Fujitsu <sup>5</sup>	\$2499
1.2GB Toshiba <sup>3</sup>	\$1299
1.2GB Seagate <sup>5</sup>	\$1999
2.1GB Seagate <sup>5</sup>	\$2799
1.5GB Micropolis <sup>5</sup>	\$2099

### MAGIC HARD DRIVE KITS

Internal Kit <sup>2</sup>	\$29
External Kit <sup>2</sup>	\$89

### MAGIC TAPE

Tape Included With All Magic Tape Backup Drives

150/250MB Tape Backup <sup>1</sup>	\$599
525/600MB Tape Backup <sup>1</sup>	\$999
2.0GB DAT Backup <sup>1</sup>	\$1299
2.3/5.0GB 8mm Backup <sup>1</sup>	\$2895/\$3799

### MAGIC REMOVABLE DRIVES

Turn the page for Magic Removable SyQuest,  
Optical, and CD-ROM, from MacProducts USA.

**\$399**

**MAGIC SCSI RAM DRIVE**  
UPGRADEABLE TO 768 MEGABYTES RAM  
STORAGE - .3 MS AVERAGE ACCESS TIME

## MAGIC COMMUNICATIONS

## MAGIC HARD WORKING TOOLS FOR YOUR MACINTOSH

### MAGIC NETWORKING

MagicNet (localtalk) singles	\$14
MagicNet (localtalk) 10-pack, ea	\$9

### MAGIC MODEMS

With Microphone Ltd. Ed.

#### MAGIC AMX MODEM

2400bps modem. 100% Hayes compatible..\$59

#### MAGIC VX V.32 MODEM

9600bps modem with compression to 38400bps.  
Hardware V.32/V.42bis & MNP5.....\$199

#### MAGIC VX V.32BIS MODEM

14400bps modem with compression to 57600bps.  
Hardware V.32bis/V.42bis & MNP5. Includes  
software and cable.....\$239

### MAGIC FAXMODEMS

With Microphone Ltd. & FaxSTF

#### MAGIC AFX & PKT FAXMODEMS

2400bps modem. 9600/4800bps, class 1, Group  
2 & 3 fax, software ....\$79, pocket version \$119

#### MAGIC FX FAXMODEM

2400bps modem. 9600bps send & receive, class  
2, Group 3 fax, software.....\$109

#### MAGIC VFX FAXMODEM

2400bps modem. 9600bps, class 2, Group 3 fax,  
V.42bis & MNP5, software.....\$139

#### MAGIC VFX V.32BIS FAXMODEM

14400bps modem. 14400bps, class 2, Group 3  
fax, V.42bis/V.32bis & MNP5, software ...\$249



ALL MAGIC MODEMS INCLUDE  
A 2 YEAR WARRANTY AND 30  
DAY MONEY BACK GUARANTEE



EXTERNAL 2400 BAUD,  
9600 BAUD, & 14400 BAUD  
MODEMS AND FAXMODEMS

ADVANCED V.42BIS, V.32BIS,  
& MNP 5 ERROR CHECKING  
AND DATA COMPRESSION  
CAPABILITIES

#### MAGIC AFX-24/96

**POWERBOOK FAXMODEM**  
MOUNTS INTERNALLY IN ANY MACINTOSH  
POWERBOOK - GROUP 3, CLASS 1 FAX

**\$79**

14400 BPS

#### POWERBOOK FAXMODEM

MOUNTS INTERNALLY IN ANY MACINTOSH  
POWERBOOK. MNP-10. WITH SOFTWARE.  
CELLULAR COMPATIBLE

**\$299**

DIAL OUR FIRST CLASS  
BBS FOR SOFTWARE  
UPDATES. FREE BBS  
ACCESS SOFTWARE WITH  
EVERY MAGIC PURCHASE.  
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VTI 00-8-1-NONE



**MAGIC RAILGUN 030 ACCELERATORS – INCREDIBLE PERFORMANCE FOR YOUR MACINTOSH SE, PLUS OR CLASSIC.**

**ACCELERATORS AVAILABLE WITH BUILT-IN LARGE SCREEN VIDEO OUTPUT**

**MAGIC PERFORMANCE UPGRADES FOR THE MACINTOSH LC, IISI, IICI, CLASSIC II & SCSI**



**RAILGUN 030 PRO SYSTEM NOW AVAILABLE IN 220 VOLT!**

### RAILGUN 030 PRO SYSTEM

030 Accelerators with Built-in 32-bit Video Output, 68882 Math CoProcessor, PMMU, or your Macintosh SE, Classic\* or Plus\*. Available with Magic 19" Display.

	w/ display	card only
16MHz RailGun Pro .....	\$899	\$599
25MHz RailGun Pro .....	\$949	\$649
33MHz RailGun Pro .....	\$1199	\$899
50MHz RailGun Pro .....	\$1299	\$999

\*Add \$99 for Classic or Plus Version

**EVERY MAGIC RAILGUN NOW INCLUDES 16MB VIRTUAL RAM FREE, EXPANDABLE TO 36MB**

### RAILGUN 030

030 Accelerators for your Macintosh SE, Classic\* or Plus\*. Optional 68881/2 Math FPU, Built-in SCSI accelerator. Easy user installable design.

Magic RailGun 16MHz .....	\$399
Magic RailGun 25MHz .....	\$449
Magic RailGun 33MHz .....	\$499
Math CoProcessor Upgrade .....	\$49/\$99
Virtual 3.0 Virtual RAM software .....	\$49

\*Add \$99 for Plus or Classic version

### MAGIC ACCELERATORS

Magic Math LC CoProcessor .....	\$39/\$59
Magic Math Classic II CoProcessor .....	\$39/\$59
Magic IISI Dual Slot Card with FPU .....	\$99
Magic Cache IICI / IISI 64k .....	\$159

### RAILGUN™ 030 SYSTEM V. MOBIUS 030

HARDWARE FEATURES	RAILGUN 030 PRO SYSTEM WITH 19" DISPLAY	MOBIUS 030 SYSTEM WITH 19" DISPLAY
CPU SUPPORT	SE, CLASSIC, PLUS	SE, CLASSIC
PROCESSOR	25MHZ MOTOROLA 68030	25MHZ MOTOROLA 68030
68882 CHIP	BUILT-IN FPU	\$95 OPTION
VIDEO PATH	32-BIT VIDEO BUS	16-BIT VIDEO BUS
VIDEO CLOCK	25MHZ	8MHZ
MONITOR RES.	1152 x 876	1024 x 768
VIDEO SUPPORT	OVER 57 DISPLAYS	4 DISPLAYS
VIRTUAL RAM	INCLUDED	\$99 OPTION
EXPANSION PORT	YES	NO
ETHERNET SUPPORT	YES	NO
BASE PRICE	\$949	\$1290

**RAILGUN 030 OUTPERFORMS MOBIUS 030 IN TEST AFTER TEST! 11% FASTER IN RAW PROCESSING POWER & 79% FASTER IN VIDEO THROUGHPUT!**



## MAGIC MEMORY UPGRADES

### MACINTOSH RAM

1MB SIMMs .....	Starting at \$29
2MB SIMMs .....	\$65
4MB SIMMs .....	\$119
16MB SIMMs .....	\$549
4MB Classic Upgrade .....	\$99
LC VRAM .....	\$59
Quadra VRAM .....	\$29

**CALL MACPRODUCTS USA FOR NEW MACINTOSH SIMMS.**

**FREE CONNECTIX POWERBOOK UTILITIES WITH POWERBOOK OR DUO MEMORY**

### POWERBOOK RAM

4MB PB 140, 145, & 170 .....	\$179
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4MB / 6MB PB 160 & 180 .....	\$199 / \$289
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#### POWERBOOK 180 SYSTEM

PowerBook 180 (33MHz w/FPU, 8MB RAM & 120MB HD, ACTIVE MATRIX Gray Scale Screen), Prometheus 14,400 BPS Data/FAX/VoiceMail Modem w/Software, ABC Software Bundle, Connectix CPU PowerBook Utilities, Targus Leather Case, BTI Extended Life Battery and Panamax Surge Suppressor  
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#### POWERBOOK 160 SYSTEM

PowerBook 160 (25MHz, 4MB RAM & 80MB Hard Drive), ABC Software Bundle, Connectix CPU PowerBook Utilities, Targus Leather Case, BTI Extended Life Battery and Panamax Surge Suppressor  
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Multi-Spin, Multi-Session, Photo CD Compatible  
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Toshiba Bundle .....\$649  
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Multimedia Encyclopedia.....\$49  
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	Price	Tube type	640 x 480	640 x 870	832 x 624	1024 x 768	1152 x 870	Auto-syncing	Anti-glare
A. Radius 21" Color	\$3,069	Hitachi					■		■
NEC 21" 6FG Color	2,429	NEC	■		■	■	■	■	
SuperMac 21" Mono/Grayscale	989	—					■		■
B. SuperMac 20" (SuperMatch)	\$1,499	Hitachi				■			■
C. RasterOps 20" Trinitron Multi-Mode	2,329	Trinitron	■		■	■	■	■	■
D. RealTech 20" Trinitron Multi-Mode	1,895	Trinitron	■		■	■	■	■	■
Radius Precision Color 20"	2,389	Trinitron	■		■	■	■	■	■
RasterOps 20" Hitachi Color	1,469	Hitachi	■		■	■	■	■	■
* SuperMac 20" (SuperMatch Dual-Mode)	2,499	Trinitron				■	■		■
E-Machines 19" Color (T19 II)	2,399	Trinitron				■	■	■	■
E. Mitsubishi 17" Diamond Pro	\$1,199	Trinitron	■		■	■	■	■	■
F. NEC 17" 5FG Color	1,329	NEC	■		■	■	■	■	
G. Sony 17"	1,149	Trinitron	■		■	■	■	■	■
H. RealTech 17" Multi-Mode	995	Hitachi	■		■	■	■	■	■
I. Seiko Instruments 17" CM1760LR	1,249	Trinitron	■		■	■	■	■	■
J. RasterOps 16" (RasterOps Sweet 16)	\$1,249	Panasonic			■				■
* E-Machines 16" Color (ColorPage T16)	1,299	Trinitron	■		■	■	■	■	■
K. NEC 15" 4FG Color	789	NEC	■		■	■	■		
L. Radius 15" Precision Color Pivot	\$959	Non-Trinitron	■	■	■	■		■	■
M. Sigma 15" Grayscale (PageView GS)	579	Phillips		■					■
N. RealTech 15" Grayscale	449	—		■					■
Sigma 15" Grayscale (Power Portrait)	659	Phillips		■					■
NEC 15" 3FGX Color	669	NEC	■		■	■		■	
O. Seiko Instruments 14" Color (CM1445)	\$499	Trinitron	■						■
P. Sony 13" Color	689	Trinitron	■						■

\* shown above

Your Hardware That Fits partner will tell you which monitors are on-board compatible, and which ones require a card or cable

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I **SII**  
Seiko Instruments



K **NEC**



M **SIGMA DESIGNS**

*Don't know which card  
is compatible with  
your CPU & monitor?  
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## RASTEROPS

	Price	Maximum resolution	Accelerated
ProColor 32	\$3,219	1152 x 870	■
PaintBoard 24	1,599	1152 x 870	■
8XL	479	1152 x 870	■
PaintBoard Li (24)	829	1024 x 768	■
24STV*	799	640 x 480	■
MediaTime*	1,599	640 x 480	■

## SUPERMAC

Spectrum/24 PDQ Plus	\$1,549	1152 x 870	■
Spectrum/8 NuBus	419	1024 x 768	■
Spectrum/8 LC II, IIsi	499	1152 x 870	■
Spectrum/24 Series IV	829	1024 x 768	■
Spectrum/8•24 PDQ	829	640 x 480	■
Spectrum/8•24	579	640 x 480	■
Video Spigot*	369	160 x 120	■
Video Spigot & Sound*	479	160 x 120	■

## RADIUS

Precision Color 24X	\$1,539	1152 x 882	■
Precision Color 8XJ	499	1152 x 882	■
Precision Color 24XK	829	1024 x 768	■
Precision Color 24XP	499	832 x 624	■
Video Vision*	1,979	640 x 480	■

## E-MACHINES

ColorLink DC/T (8-bit with Ethernet)	519	1024 x 768	■
ColorLink SX/2 (24-bit with Ethernet)	649	1024 x 768	■
Futura SX24	499	1024 x 768	■
DoubleColor LX (8)	699	1152 x 870	■

\*24-bit; captures up to 30 frames per second



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Flatbed desktop scanners for 24-bit color, 8-bit grayscale, and black/white images. Ideal for mid-range output or position prints for mockups/presentations.

	Price	DPI	Brightness & contrast levels	Scanning area	Flat art	Transparencies	Slides	Software
<b>MICROTEK</b>								
Scanmaker II	\$909	600	14	8.5 x 13.5	■			Includes limited version of Adobe Photoshop
Scanmaker IIXE	1,179	600	14	8.5 x 13.5	■			Includes full version of Adobe Photoshop
<b>REALTECH</b>								
Scan 800	\$1,099	800	200	8.5 x 11.75	■			Includes Scan-Match color calibration software
Optional Adobe Photoshop	200							
Scan 800 with Transparency Option	1,595	800	200	8.5 x 11.75	■	■	■	
<b>UMAX</b>								
UC 630	\$1,179	600	51	8.5 x 14	■			Includes full version of Adobe Photoshop
Transparency Option	729	(600)	(51)	6 x 9	■	■	■	
UC 840	1,329	800	51	8.5 x 14	■			Includes full version of Adobe Photoshop
Transparency Option	729	(800)	(51)	6 x 9	■	■	■	



The photo above is a 300 dpi image of an 8 x 10 transparency. It was scanned on the RealTech Scan 800 with the Transparency Option (shown below), then adjusted with ScanMatch and color-corrected with Adobe Photoshop.

**RealTech** Real Tech Scan 800 with Transparency Option



Microtek Scanmaker II

**MICROTEK**

## SII Seiko Instruments Personal ColorPoint PSE

**\$2,699**

Lease: \$73/mo.

Prints full-bleed comps on plain laser paper (up to 10.1x14.33) or transparency film. 300 dpi color thermal printer uses 16 MHz RISC processor. 5 Mb RAM standard, upgradable to 9 or 21 Mb. Adobe PostScript® compatible. Includes AppleTalk, parallel, and RS-232 interfaces, plus an optional SCSI port. Continuously



polls all interfaces; reconfigures automatically. 17 resident fonts.

## RealTech Color 350

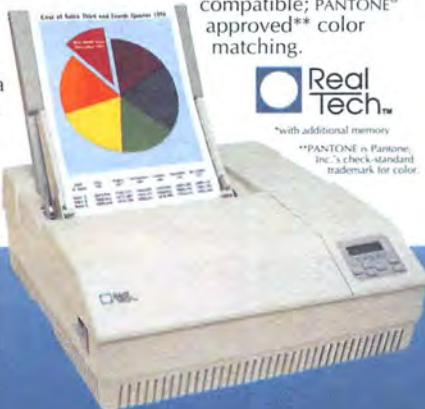
**\$5,995**

Lease: \$164/mo.

Prints 11x17 (OB size)\* 300 dpi edge-to-edge comps for about \$1.13 per page. (Letter-size output, approx. 69¢ each.) Creates true black text—uses 4 colored ink sheets (CMYK). RISC processor. 10 Mb of RAM, upgradable to 18 or 34 Mb. 3 standard interfaces. 39 resident fonts. Adobe PostScript® compatible; PANTONE® approved\*\* color matching.

**RealTech**

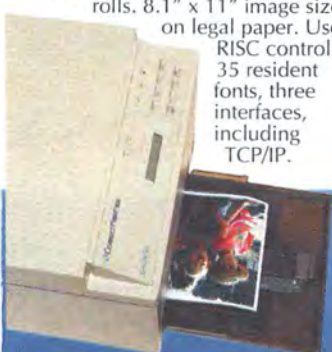
\*with additional memory  
\*\*PANTONE is Pantone, Inc.'s check-standard trademark for color.



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### LETTER SIZE

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NEC Silentwriter 95	1399
NEC Silentwriter 95fx	1879
NEC Silentwriter 97	1719
NEC Silentwriter 97fx	2199
NewGen PS660	2699
NewGen PS880P	2119
Texas Instruments PS17	1099
Texas Instruments Turbo	1449

### TABLOID SIZE

RealTech Laser 400	\$3195
NewGen 660B	4059
QMS 860	4279
NewGen 660B with Ethernet	4499

### COLOR

RealTech Color 350	\$5995
Seiko Instruments Personal ColorPoint PSE	2699
QMS 210	4699
RasterOps Correct Print 300i	8099



# Printing solutions.

## Laser printers.

The right printer can do wonders for your productivity. Do you need speed? Adobe PostScript Level 2? Do you need to print a lot of pages each month?

Dpi	Engine speed	RAM	Interpreter	Microprocessor	Duty cycle	Paper trays	SCSI port	Interfaces	Resident fonts	Misc.
-----	--------------	-----	-------------	----------------	------------	-------------	-----------	------------	----------------	-------

Do you need to print complex graphics on a daily basis or large quantities of high-quality, time-sensitive documents? We can recommend the right printer for your needs.

### NEC Silentwriter Model 95

**\$1,399**

Lease: \$38/month

- 300 dpi
- 6 pages/min.
- 2 Mb RAM (expandable to 5 Mb)

- Adobe PostScript Level 2
- Motorola 68000 processor

- 6,000 pages per month
- Built-in envelope feeder & 250-sheet tray; optional 2nd tray available in letter or legal sizes

- No SCSI port
- Appletalk RS-422, parallel, and RS-232C

- 35 Micro-fine toner and NEC's patented "Sharp Edge" technology create sharp black print quality

NEC



### RealTech Laser



- 300 dpi
- 9 pages/min.
- 3 Mb RAM (expandable to 10 Mb)

- Adobe PostScript Level 2
- Weitek RISC processor

- 5,000 pages per month
- Optional 2nd paper tray & cassette feeder are available for \$250 (for both)

- SCSI port
- Appletalk RS-422, parallel, and RS-232C

- 35 ATM font rendering technology builds raw type characters 4 to 5 times faster, enabling the RealTech Laser to print complex documents faster than other printers in its price range.

### RealTech Laser Plus

**\$1,449**

Lease: \$40/month

★★★★½

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★★★★1/2  
"The RealTech features not just a genuine Adobe interpreter, but also a PostScript Level 2 raster image processor (RIP), which earns it more than a few points for forward compatibility."  
— PUBLISH MAGAZINE, Feb. 1992

### Texas Instruments MicroLaser XL Turbo

**\$2,795**

Lease: \$77/month

- 300 dpi
- 16 pages/min.
- 2.5 Mb RAM (expandable to 10.5 Mb)

- Adobe PostScript Level 2
- Weitek RISC processor

- 25,000 pages per month
- Optional 2nd paper drawer

- Optional SCSI port
- Appletalk RS-422, parallel, and RS-232C

- 35

- 35

### TEXAS INSTRUMENTS



### Texas Instruments MicroLaser Plus

**\$1,099**

Lease: \$30/month

- 300 dpi
- 9 pages/min.
- 1.5 Mb RAM (expandable to 4.5 Mb)

- Adobe PostScript Level 1
- Motorola 68000 processor

- 10,000 pages per month
- Optional 2nd paper drawer and envelope feeder

- Optional SCSI port
- Appletalk RS-422, parallel, and RS-232C

- 17 Available with 35 resident fonts (\$1349)



### newgen

- 600 dpi
- 8 ppm (letter size); 4.6 ppm (tabloid size)
- 12 Mb RAM (expandable to 96 Mb)

- PostScript compatible
- Weitek XL-8220 RISC processor

- 10,000 pages per month
- Optional 2nd paper drawer

- SCSI port
- Appletalk RS-422, parallel, RS-232C

- 35

### NewGen 660B

**\$4,059**

Lease: \$111/month

The only 11x17 printer with Adobe PostScript Level 2 for less than \$3500.



- Choice of 300 or 400 dpi
- 15 ppm (letter size); 8 ppm (tabloid size)
- 4 Mb RAM (expandable to 16 Mb)

- Adobe PostScript Level 2
- Weitek RISC processor (and ATM font rendering technology)

- 30,000 pages per month
- Two paper trays included (one tray for letter size; one tray for tabloid size.)

- SCSI port
- Three interface ports: Appletalk RS-422, IBM PC parallel, and RS-232C.

- 35

Jeanne is thrilled that she can print proofs of her company newsletter on tabloid-size paper. No more tiling!

★★★★★ MACWORLD MAGAZINE September 1992

"...be forewarned: PostScript-clone printers still have a long way to go before they can rival true Adobe PostScript printers."

Quote from MacUser September 1992 issue. "Personal PostScript Printers" by Bruce Fraser.

### RealTech Laser 400

**\$3,195**

Lease: \$88/mo.

### QMS 860 Hammerhead

**\$4,279**

Lease: \$117/mo.

- 600 dpi
- 8 ppm (letter size); 4.6 ppm (tabloid size)
- 12 Mb RAM (expandable to 32)

- Adobe PostScript compatible
- Intel 80960CA RISC processor

- 10,000 pages per month
- Optional 2nd paper cassette

- SCSI port
- Optional Ethernet
- 39 fonts

Three interface ports: Appletalk RS-422, IBM PC parallel, and RS-232C.



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## ACCELERATORS

**DO YOU FEEL THE  
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### DAYSTAR DIGITAL



#### NEW! Turbo 040 Accelerators

Get the maximum in 68040 acceleration and 100% compatibility. For Mac IIci and IIx; includes math chip.

25 MHz Turbo 040 ..... **\$1099**  
33 MHz Turbo 040 ..... **1349**

25 MHz FastCache  
Turbo 040 ..... **259**

33 MHz FastCache  
Turbo 040 ..... **339**

#### Universal PowerCache Accelerators

Math chip available. Supports 16 platforms.

33 MHz Accelerator ..... **\$379**

40 MHz Accelerator ..... **549**

50 MHz Accelerator ..... **719**

PowerCache Adapter ..... **40**

#### Charger (Photoshop Accelerator)

Includes PicturePress 2.5, Charger Plug-ins, and Kodak Photo CD access with clip art images.

Charger ..... **\$799**

### RADIUS

## radius ROCKET™

For the Mac II family. Includes QuickDraw and display-list acceleration software.

Radius Rocket 25i ..... **\$999**

Radius Rocket 33 ..... **2069**

SCSI II Booster ..... **249**

Rocket Share ..... **419**

## FUSION DATA SYSTEMS



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## CARDS AND HUBS



### Asanté 10T Hub/8 (Ethernet concentrator)

Lets you use inexpensive unshielded twisted-pair (UTP) telephone wire instead of expensive coaxial cable for local area networks.

10Base-T Hub/8 ..... **\$255**

Asanté EN/SC (SCSI-to-Ethernet adapter). For Macs without available slots.

EN/SC ..... **\$329**

Asanté MacCon 3 Ethernet card. Automatically configures to media used.

MacCon 3 Card ..... **\$209**

### DaynaPORT E/II-T NuBus Card

Connects Mac II computers to thick, thin, fiber optic or 10Base-T Ethernet cable systems.

Includes an RJ-45 jack for 10Base-T wiring.

DaynaPORT E/II-T NuBus Card ..... **\$149**

DaynaPort E/Z. Ideal for Macs that don't have a slot for a network interface card.

DaynaPORT E/Z ..... **\$269**

## MODEMS

Zoom 9600 v.32/42 bis ..... **\$259**

Supra v.32 ..... **289**

Supra v.32 bis 14,400 ..... **359**

SupraFax Modems include STF and Microphone software, and are backed by a 5-year warranty.

SupraFax Modem Plus ..... **179**

SupraFax 144 PB ..... **299**

MassMicro FM 24/96 Network ..... **359**

MassMicro FM 24/96 Personal ..... **165**

Global Village PowerPort-Gold ..... **459**

Global Village PowerPort-Silver ..... **399**

Global Village PowerPort-Bronze ..... **209**

## BRIDGES AND ROUTERS



### Shiva



FastPath 5R Router/Gateway ..... **\$1669**

NetBridge ..... **589**

EtherGate Router ..... **1239**

NetSerial ..... **269**

NetModem/E ..... **1409**

NetModem v.32 (for LocalTalk) ..... **989**

Hublet ..... **199**

LanRover/L ..... **579**

LanRover/E (4-port) ..... **1659**

TeleBridge ..... **589**

### Dayna EtherPrint

Supports AppleTalk Phase 1 and Phase 2 protocols; divide your network into multiple zones.

Dayna EtherPrint ..... **\$335**

Dayna EtherPrint Plus ..... **439**



## STORAGE OPTIONS



### PLI

Infinity 44 Mb Drive ..... **\$499**

Infinity 88 Mb Drive ..... **669**

128 Mb 3.5" Magneto-Optical Drive ..... **1399**

88 Mb Read/Write 44 ..... **689**

CD ROM Multi-Session-Int ..... **589**

CD ROM Multi-Session-Ext ..... **649**

1 Gb MaxOptical 5.25" Erasable Drive ..... **3549**

1 Gb MiniArray Drive-Ext ..... **2889**

2 Gb MiniArray Drive-Ext ..... **4039**

Quick SCSI Accelerator ..... **339**



### MASS MICROSYSTEMS

21 Mb Floptipak Drive ..... **\$439**

45 Mb DataPak Removable Cartridge Drive ..... **519**

88c Mb DataPak Removable Cartridge Drive ..... **649**

128 Mb 3.5" DataPak Magneto-Optical Drive ..... **1339**

120 Mb DiamondDrive ..... **469**

210 Mb DiamondDrive ..... **549**

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Lease: \$191/month

**Quadra 800/Trinitron Intermediate Graphics Solution**  
Quadra 800, 8 Mb of RAM, 230 Mb hard drive, RealTech 20" Trinitron monitor w/RasterOps PaintBoard Li and Key Tronic MacPro Plus extended keyboard.

**\$8,819**  
Lease: \$241/month

**Quadra 950/Trinitron High-end Graphics Solution**  
Quadra 950, 8 Mb of RAM, 520 Mb hard drive, RasterOps 20" Trinitron monitor w/RasterOps PaintBoard Li and Key Tronic MacPro Plus extended keyboard.

## POWERBOOK SYSTEMS

PowerBook Duo 210 8/80 .....	\$2499
PowerBook Duo 230 8/80 .....	2859
PowerBook 160 8/40 .....	2679
PowerBook 165c 4/80 .....	3399
PowerBook 180 8/80 .....	4359

## POWERBOOK PORTABLE DOCKS

PowerLink Presenter (8-bit) .....	\$469
Designed for presentations. Connects the PB Duo to almost any type of video screen. The ideal travel dock.	
PowerLink DeskNet (8-bit) .....	659
Connects to Ethernet networks, color displays, external SCSI devices, etc.	



## LCIII SYSTEM

LCIII, 4 Mb of RAM, 80 Mb hard drive, RealTech 15" full page display, and standard Apple keyboard .....	\$1799
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## CENTRIS 610 SYSTEMS

Centris 610, 4 Mb of RAM, 80 Mb hard drive, Seiko Instruments 14" Color CM1445 monitor, and Key Tronic MacPro Plus extended keyboard .....	\$2415
Centris 610, 8 Mb of RAM, 80 Mb hard drive, RealTech 17" color monitor, built-in Ethernet and FPU, and Key Tronic MacPro Plus extended keyboard .....	\$3179

## CENTRIS 650 SYSTEMS

Centris 650, 8 Mb of RAM, 80 Mb hard drive, Sony 17" Color monitor, and Key Tronic MacPro Plus extended keyboard .....	\$4075
Centris 650, 8 Mb of RAM, 230 Mb hard drive, 20" Real Tech Trinitron monitor, RasterOps Paintboard Li, and Key Tronic MacPro Plus extended keyboard .....	\$5695

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**MONITOR**



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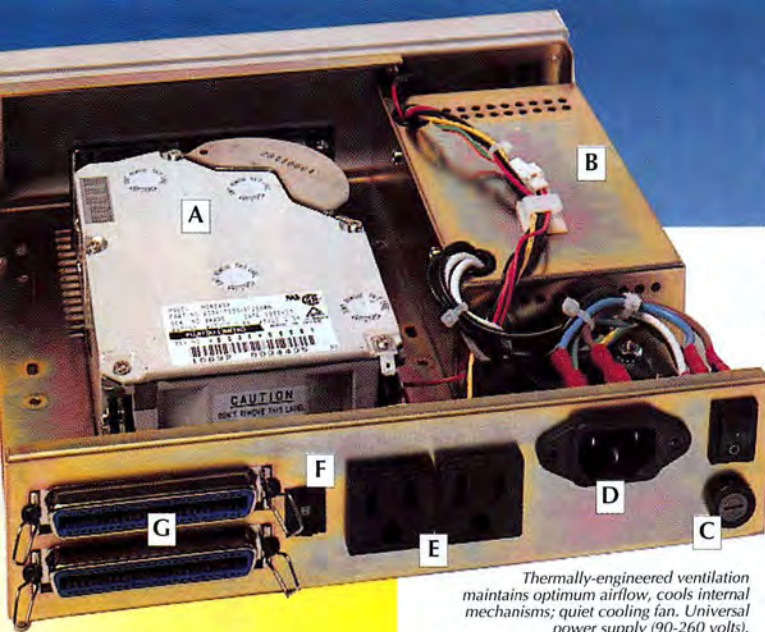
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# HARD DRIVES



Thermally-engineered ventilation maintains optimum airflow, cools internal mechanisms; quiet cooling fan. Universal power supply (90-260 volts).

## Why our drives are superior

- Fast access times
- top-level warranties
- optimum MTBF
- and...

- A. We use the highest quality name-brand mechanisms available; fully tested and burned in
- B. Shielded 40 watt power supply (65 watt for FH drives) keeps the drive free of interference, your data free of corruption

- C. External fuse keeps fuse replacement simple.
  - D. Power cable plug-in
  - E. Two switched outlets provide power to additional peripherals, allowing one-step system power-up
  - F. Easy-to-use pushbutton SCSI I.D. selector switch
  - G. Two 50-pin SCSI connectors for simple configuration
- (Not shown) Premium double-shielded 26-inch Mac-to-SCSI cable prevents electronic interference

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To a lot of you, we've become a trusted business partner. So when you told us we needed to offer you more storage options, we listened. Our systems engineers have worked tirelessly to design the best possible enclosure for name-brand mechanisms. **The result? These drives are the value you've been looking for—priced right, and built with the quality your irreplaceable data demands.**

During the past eight years, we've become America's one-stop source for Macintosh solutions. Now we can be your one-stop source for storage solutions, too. Because we're the company you can trust to give you the very best...

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Stack up our drives against the "best of the best" and they'll come out on top. You can trust us to always bring you the highest-quality Mac hardware!



Need a really big drive, with a LOT of storage capacity? These drives offer big performance.

	Model number	Price (Internal)	Price (External)	Formatted Mac capacity	Avg. access time	Transfer rate*	MTBF** (hours)	Form factor	Warranty (years)
<b>1.1 - 3.6 Gb</b>									
Fujitsu 1.2	M2266	<del>\$1395</del>	<del>\$1495</del>	1079 Mb	14.5 ms	3.0 <sup>1</sup>	200,000	5.25 FH	5
HP 1.2	C2247	<del>1589</del>	<del>1659</del>	1000 Mb	10.5 ms	5.3 <sup>1</sup>	300,000	3.5 HH	5
Micropolis 1.2	M2112	<del>1449</del>	<del>1519</del>	1005 Mb	10 ms	5.0 <sup>1</sup>	300,000	3.5 HH	5
Quantum 1.2	PRO1225	<del>1599</del>	<del>1669</del>	1200 Mb	10 ms	2.9 <sup>1</sup>	350,000	3.5 HH	2
Seagate 1.2	ST41200N	<del>1369</del>	<del>1469</del>	999 Mb	15 ms	3.0 <sup>1</sup>	150,000	5.25 FH	1
Toshiba 1.2	MK-538FB	<del>1399</del>	<del>1469</del>	1200 Mb	12.5 ms	4.0 <sup>1</sup>	200,000	3.5 HH	3
Maxtor 1.2	MXT-1240	<del>1549</del>	<del>1619</del>	1240 Mb	9 ms	4.5 <sup>1</sup>	300,000	3.5 HH	3
Conner 1.3	CP-31370	<del>\$2099</del>	<del>\$2169</del>	1030 Mb	10.5 ms	6.0 <sup>1</sup>	250,000	3.5 HH	1
Micropolis 1.5	M1528	<del>2299</del>	<del>2399</del>	1341 Mb	14.5 ms	2.9 <sup>1</sup>	150,000	5.25 FH	5
Micropolis 1.6	M1548	<del>2379</del>	<del>2479</del>	1748 Mb	14 ms	4.8 <sup>1</sup>	150,000	5.25 FH	5
Seagate 1.6	ST41651N	<del>1899</del>	<del>1999</del>	1352 Mb	15 ms	4.0 <sup>2</sup>	150,000	5.25 FH	1
Fujitsu 2.0	M2652	<del>\$2449</del>	<del>\$2549</del>	1752 Mb	11 ms	4.8 <sup>2</sup>	200,000	5.25 FH	5
Micropolis 2.0	M1924	<del>2649</del>	<del>2749</del>	2100 Mb	11.5 ms	4.8 <sup>2</sup>	250,000	5.25 FH	5
Seagate 2.1	ST42100N	<del>1999</del>	<del>2099</del>	1900 Mb	12.9 ms	3.9 <sup>2</sup>	150,000	5.25 FH	5
Seagate 2.4	ST42400N	<del>2879</del>	<del>2979</del>	2050 Mb	11 ms	4.5 <sup>2</sup>	150,000	5.25 FH	5
HP 2.4	C3010	<del>2899</del>	<del>2999</del>	2000 Mb	11.5 ms	5.3 <sup>2</sup>	300,000	5.25 FH	5
Seagate 3.4	ST43400N	<del>3999</del>	<del>4099</del>	2750 Mb	11 ms	6.0 <sup>2</sup>	200,000	5.25 FH	5
Micropolis 3.6	M1936	<del>4199</del>	<del>4299</del>	3022 Mb	12 ms	6.0 <sup>2</sup>	250,000	5.25 FH	5

\* Transfer rate (or throughput) depends on your Mac CPU and system configuration. For more information, ask your Hardware That Fits sales partner. \*\*MTBF=Mean Time Between Failure HH=Half Height FH=Full Height

<sup>1</sup> SCSI-2 <sup>2</sup> SCSI-2 Fast These drives are most efficient when used with a Macintosh Quadra 800, 950 or a RealTech SCSI-2 card.

## Limited time offer!

Included **FREE** with your drive...award-winning **Now Utilities (Version 4.0.1)**.

Includes 7 powerful utilities: Startup Manager, Super Boomerang, WYSIWYG Menus, Now Profile, and much more. Use Now Utilities to maximize System 7's capabilities, and to simplify using your Mac.



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Allows all Macs to communicate with newer, high-performance hard drives at substantially faster transfer rates. Sustained transfer rate of up to 4.4 Mb per second, plus a burst transfer rate of 6 Mb per second (6/10 on a Quadra). Mirroring capabilities.

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## DRIVE SOFTWARE



RealTech drive utilities are included with your drive. Disk partitioning; password protection; diagnostic testing; multiple SCSI-bus support; extensive on-line help; and more. Also included: System 7.01.



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### Maxoptix Tahiti II Drive

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### REALTECH TAPE BACKUP

Includes Retrospect 2.0 backup software.

TEAC 155 Mb Drive.....**\$499**  
TEAC 600 Mb Drive.....**749**

### REALTECH DAT

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The RealTech DAT Drive uses industry-standard DDS-DC compression on a 90-meter tape. Depending on your data, storage capacities may vary from 4 to 8 Gb.

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44 Mb Drive.....**\$389**  
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652 Mb M-O Cartridge.....**99**

1.0 Gb ZCAV M-O Cartridge.....**239**

155 Mb TEAC Tape.....**\$19**

600 Mb TEAC Tape.....**28**

60-meter DAT Tape.....**\$13**

90-meter DAT Tape.....**16**

44 Mb SyQuest Cartridge.....**\$63**

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90 Mb Bernoulli Cartridge.....**\$Call**

150 Mb Bernoulli Cartridge.....**Call**

Do you need a fixed hard drive, or the flexibility of a floptical? Call us; we can explain your options.

Model number	Price (Internal)	Price (External)	Formatted Mac capacity	Avg. access time	Transfer rate*	MTBF** (hours)	Form factor	Warranty (years)	
<b>40 - 120 Mb</b>									
Conner 85	CP-30080E	<b>\$209</b>	<b>\$279</b>	82 Mb	17 ms	1.5	150,000	3.5 LP	1
Quantum 85 ELS	ELS85	<b>209</b>	<b>279</b>	82 Mb	17 ms	1.4	250,000	3.5 LP	2
Conner 120	CP-30100	<b>279</b>	<b>349</b>	116 Mb	17 ms	1.5	150,000	3.5 LP	1
Maxtor 120	7120XT	<b>239</b>	<b>309</b>	121 Mb	15 ms	1.5	150,000	3.5 LP	2
<b>120 - 250 Mb</b>									
Quantum 127 ELS	ELS127	<b>\$279</b>	<b>\$349</b>	124 Mb	17 ms	1.4	250,000	3.5 LP	2
Conner 170	CP-30170E	<b>289</b>	<b>359</b>	160 Mb	9 ms	1.5	150,000	3.5 LP	1
Quantum 170 ELS	ELS170	<b>299</b>	<b>369</b>	160 Mb	17 ms	1.4	250,000	3.5 LP	2
Conner 212	CP-30200	<b>369</b>	<b>439</b>	206 Mb	12 ms	2.5 <sup>1</sup>	150,000	3.5 LP	1
Maxtor 213	7213	<b>339</b>	<b>409</b>	207 Mb	15 ms	2.8	150,000	3.5 LP	2
Quantum 240	LPS240	<b>389</b>	<b>459</b>	234 Mb	10 ms	1.4	250,000	3.5 LP	2
Maxtor 245	7245	<b>369</b>	<b>439</b>	245.6 Mb	15 ms	3.0	150,000	3.5 LP	2
Seagate 248	ST3283N	<b>519</b>	<b>589</b>	235 Mb	12 ms	3.0 <sup>2</sup>	250,000	3.5 LP	1
<b>320 - 560 Mb</b>									
Maxtor 340	LXT-340	<b>\$599</b>	<b>\$669</b>	324 Mb	15 ms	2.1 <sup>1</sup>	150,000	3.5 HH	2
Fujitsu 425	M2623FA	<b>899</b>	<b>969</b>	405 Mb	9 ms	2.7 <sup>1</sup>	200,000	3.5 HH	5
Seagate 426	ST1480N	<b>919</b>	<b>989</b>	426 Mb	14 ms	2.6 <sup>1</sup>	150,000	3.5 HH	1
Fujitsu 520	M2624FA	<b>939</b>	<b>1009</b>	496 Mb	9 ms	2.7 <sup>1</sup>	200,000	3.5 HH	5
Quantum 525 LPS	LPS525	<b>959</b>	<b>1029</b>	500 Mb	10 ms	3.2 <sup>1</sup>	250,000	3.5 LP	2
Seagate 525	ST1581N	<b>1029</b>	<b>1099</b>	525 Mb	14 ms	4.0 <sup>2</sup>	150,000	3.5 HH	1
Maxtor 540	MXT-540	<b>989</b>	<b>1059</b>	546 Mb	9 ms	5.5 <sup>1</sup>	300,000	3.5 HH	2
Conner 540	CP-3540	<b>899</b>	<b>969</b>	515 Mb	12 ms	5.5 <sup>2</sup>	150,000	3.5 HH	1
Micropolis 560	M2105	<b>1069</b>	<b>1139</b>	560 Mb	10 ms	5.0 <sup>2</sup>	300,000	3.5 HH	5
<b>660 Mb - 1.05 Gb</b>									
Seagate 663	ST4766N	<b>\$1119</b>	<b>\$1219</b>	645 Mb	15.5 ms	1.8	150,000	5.25 FH	1
Seagate 676	ST4767N	<b>1519</b>	<b>1619</b>	645 Mb	11.9 ms	3.0 <sup>1</sup>	150,000	5.25 FH	1
HP 677	97556	<b>1469</b>	<b>1569</b>	620 Mb	13.5 ms	2.8 <sup>1</sup>	150,000	5.25 FH	5
Quantum 700	PRO700	<b>1249</b>	<b>1319</b>	700 Mb	10 ms	2.9 <sup>1</sup>	350,000	3.5 HH	2
Toshiba 877	MK-438FB	<b>1099</b>	<b>1169</b>	830 Mb	12.5 ms	3.0 <sup>1</sup>	200,000	3.5 HH	2
Quantum 1050	PRO1050	<b>1419</b>	<b>1489</b>	1000 Mb	10 ms	2.9 <sup>1</sup>	350,000	3.5 HH	2
HP 1050	97558	<b>2099</b>	<b>2199</b>	987 Mb	13.5 ms	2.8 <sup>1</sup>	150,000	5.25 FH	5
Seagate 1050	ST11200N	<b>1649</b>	<b>1719</b>	1000 Mb	10.5 ms	5.1 <sup>2</sup>	200,000	3.5 HH	1

\* Transfer rate (or throughput) depends on your Mac CPU and system configuration. For more information, ask your Hardware That Fits sales partner. \*\*MTBF=Mean Time Between Failure LP=Low Profile HH=Half Height FH=Full Height

<sup>1</sup> SCSI-2 <sup>2</sup> SCSI-2 Fast These drives are most efficient when used with a Macintosh Quadra 800, 950 or a RealTech SCSI-2 card.

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\$ 8,001-\$11,000	\$109
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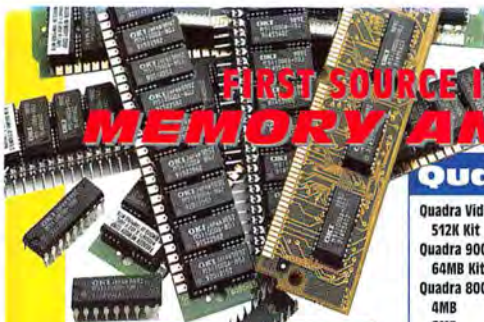
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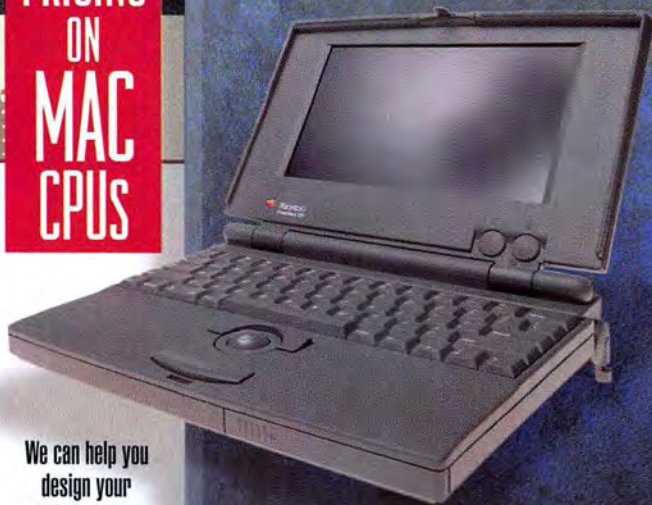
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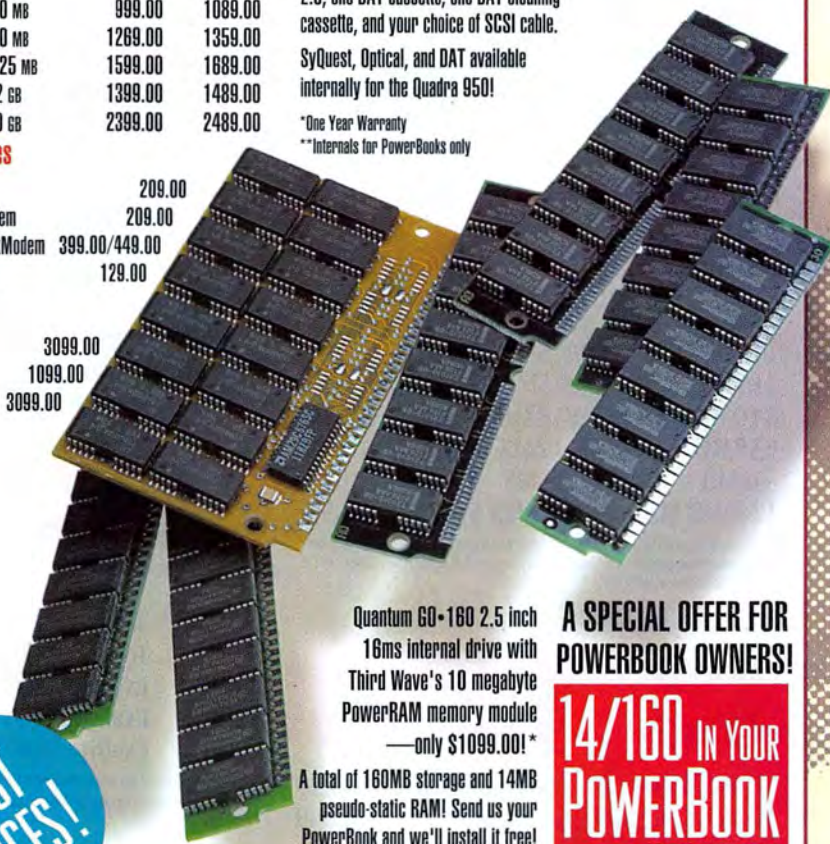
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## 1. For how many micro computers do you buy products? (check one)

☐ 01) 1-4    ☐ 02) 5-49    ☐ 03) 50+

## 2. Your primary job function is: (check one)

☐ 01) Administrative/General Management  
☐ 02) MIS/DP, Communications Systems, Programming  
☐ 03) Engineering/R&D  
☐ 04) Finance/Accounting  
☐ 05) Marketing/Sales  
☐ 06) Computer Dealer/VAR

## 3. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (check all that apply)

## 4. Which of the following products have you bought in the last 6 months? (check all that apply)

SOFTWARE

Accounting	<input type="checkbox"/> 01	<input type="checkbox"/> 01
Spreadsheets	<input type="checkbox"/> 02	<input type="checkbox"/> 02
Project Managers	<input type="checkbox"/> 03	<input type="checkbox"/> 03
Word Processors	<input type="checkbox"/> 04	<input type="checkbox"/> 04
Database Managers	<input type="checkbox"/> 05	<input type="checkbox"/> 05
Graphics	<input type="checkbox"/> 06	<input type="checkbox"/> 06
Integrated Software	<input type="checkbox"/> 07	<input type="checkbox"/> 07
Communications	<input type="checkbox"/> 08	<input type="checkbox"/> 08
Utilities	<input type="checkbox"/> 09	<input type="checkbox"/> 09

## HARDWARE

Modems  
 Scanners  
 Microcomputer  
 Printers/Plotters  
 Monitors/Displays  
 Storage  
 Add-in Boards  
 Networking

Q3	Q4
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## 5. If so, what function do you serve in the buying process? (check all that apply)

☐ 01) Initiation/ Determine Need  
☐ 02) Selection of Brand and Model  
☐ 03) Selection of Source  
☐ 04) Authorization  
☐ 05) Other

## 6. Over the next 12 months, how much will your organization spend on computer products or services? (check one)

☐ 01) over \$5 million    ☐ 05) \$50,000 - \$99,999  
☐ 02) \$1 - 5 million    ☐ 06) \$10,000 - \$49,999  
☐ 03) \$500,000 - \$999,999    ☐ 07) under \$10,000  
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Systems, Programming ☐ 06) Computer Dealer/VAR

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Spreadsheets ☐ 02 ☐ 02  
Project Managers ☐ 03 ☐ 03  
Word Processors ☐ 04 ☐ 04  
Database Managers ☐ 05 ☐ 05  
Graphics ☐ 06 ☐ 06  
Integrated Software ☐ 07 ☐ 07  
Communications ☐ 08 ☐ 08  
Utilities ☐ 09 ☐ 09

**HARDWARE**

Modems  
Scanners  
Microcomputer  
Printers/Plotters  
Monitors/Displays  
Storage  
Add-in Boards  
Networking

Q3 Q4

☐ 10 ☐ 10  
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<b>DT-2112</b>	<b>1050 Megs</b>	<b>3.9 ms</b>	<b>3.50</b>	◀▶
DT-1528	1340 Megs	4.1 ms	5.25 FH	
<b>DT-1908</b>	<b>1400 Megs</b>	<b>3.9 ms</b>	<b>5.25 FH</b>	◀▶
<b>DT-1548</b>	<b>1750 Megs</b>	<b>3.9 ms</b>	<b>5.25 FH</b>	◀
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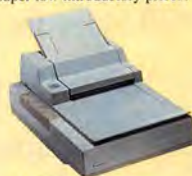
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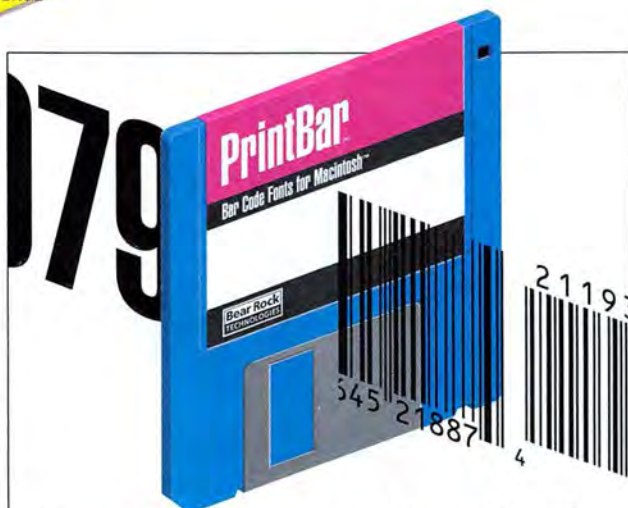
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CIRCLE 257 ON READER SERVICE CARD

PREMIER





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CIRCLE 262 ON READER SERVICE CARD

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Source: ABC, June 1992

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CIRCLE 266 ON READER SERVICE CARD

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Premier advertising

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Source: ABC, June 1992



**MacUser Premier**  
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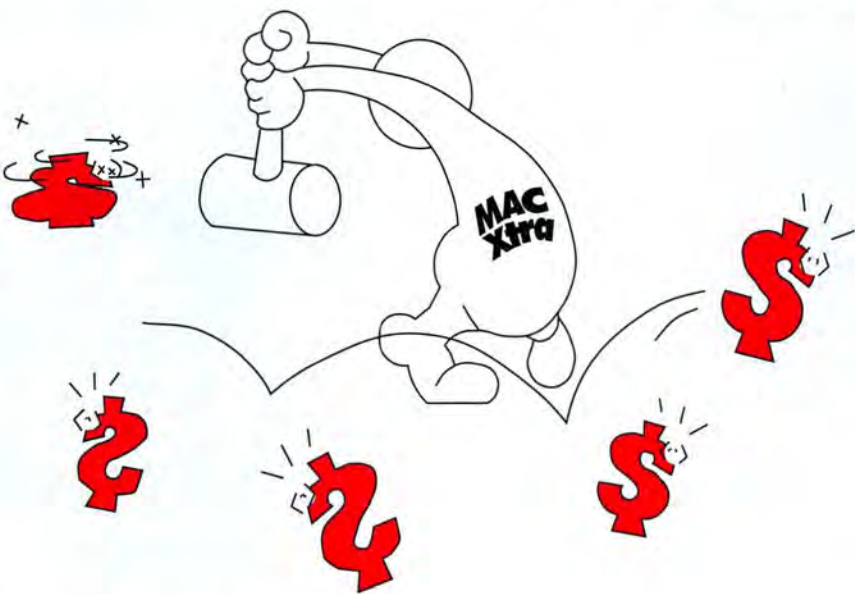
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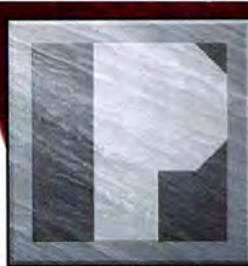
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525MB	LPS525	10ms	\$939	\$999
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NEC CD-ROM

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650Meg	27ms	Hewlett Packard	MultiFunction	N/A	\$2499
1Gig	35ms	Maxoptix Tahiti IIM	MultiFunction	N/A	\$2999
Media	20Meg \$23	20Meg 5 pack \$95	128Meg \$39	128Meg 5 pack \$179	650Meg \$96
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CD Tech CD-T3401*	200ms	256K	Push Button	Dial	CD Remote DA	2	Not Included	Not Terminated	Yes	250 Volts	327K/Second	50,000	2 Year	\$599	1824
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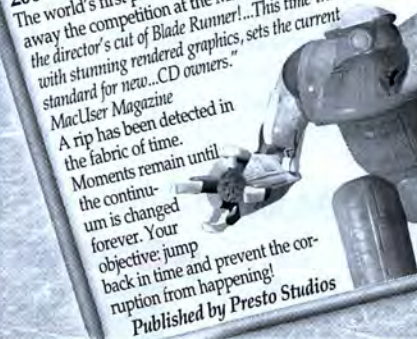
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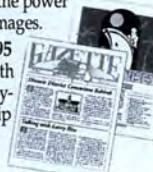
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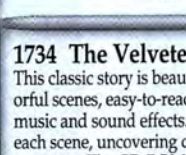
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# Mac's Monochrome World



**Users are flocking from the Mac to the PC, and the reasons are as plain as black-and-white.**



**T**he Mac is made by visionaries for visionaries, right? Well, unfortunately, the visionaries must have something wrong with their vision, because they're getting seriously aced out by the schlockmeisters who have Windows machines. All of a sudden, once-loyal Mac users are flocking to Windows. Apple is doing a mediocre job of keeping its cult followers in the fold.

Years ago, the Boston Computer Society did a survey and noticed an interesting phenomenon about Mac/PC crossover users. People who switched from the PC to the Mac seldom returned to the world of the PC: They became permanent Mac users. But users who went from the Mac to the PC invariably returned to the Mac.

The survey was conducted during the reign of DOS and its command-line interface. If the same study were done today, the results would be different.

Nowadays, people are moving to the PC and staying there. And what's most puzzling is the *kind* of users who are abandoning the Mac. They're not people who use the machine day in and day out for word processing or spreadsheet manipulation. They're the people who once formed the heart of the Macintosh cult.

Take Leo Laporte, my partner for a weekly radio call-in show. Leo had always been a Mac fanatic, so I was shocked when I found out how effortlessly he was converted to being a dedicated Windows user. Why? He claims he's attracted to the diverse new applications that pour into the market for Windows machines. He loves to fiddle with computers for hours on end.

## The Pathetic PC

What is it about PCs that makes them such attractive platforms for computer fanatics? It can't be the technology. The engine underneath both OS/2 and Windows — namely, the 1983 PC/AT architecture — is an embarrassing clunker, even with the newer Intel chips mixed in. The edge-connection-based bus is low-performance, the video I/O needs boosting, the mouse/machine interface is dreadful, and the heart of the machine — the BIOS — is archaic.

Let's face it, the PC can barely function. Windows should really be called Window Dressing, because no matter what the schlockmeisters try to foist onto this old architecture,

it simply can't compare with the design and functionality of a NuBus-based Mac, which is clearly a more modern machine. I've said it before, and I'll say it again: It's a miracle that OS/2 and Windows can even work on the PC.

As users flock to this dog of a machine, you've got to wonder what is driving them to paint themselves into such a technological corner. It can't simply be that PCs are cheaper. Many cheap machines have come and gone and failed miserably over the years. So how did the PC suddenly become the cool, wacky, fun machine for the rest of us? Wasn't that supposed to be Apple's turf?


The answer dawned on me as I began to notice person after person after person playing with Windows running on full-color laptops. *I* even have a full-color laptop running OS/2. Color!

## Color-Blind and Clueless

You can't deny it: The Mac is not as jazzy a machine in color. Both Windows and OS/2 offer numerous cool color schemes. If you want, you can color-customize every line and dot on a Windows machine. The Mac, on the other hand, offers scanty options. That's because, deep down, the Mac is a monochrome machine that wishes it were still monochrome-only.

Apple was the last on the block to come out with a color laptop, and when it did, the results didn't exactly take anyone's breath away. Remember how long the company took to bring out full-color systems in the first place? In fact, the one place where the Mac is still holding its ground is among users running 24-bit color.

I attribute this monochrome-orientation blunder to Steve Jobs, the father of the Mac. In his screwball desire to one-up Steve Wozniak, he discarded the best features of the Apple II — including color — in favor of a whole new idiom. The result was that the colorful Apple II got dumped for the original, stark, monochrome Mac. You may find this hard to believe, but Jobs even pushed monochrome at NeXT.

The new color Classic (after all these years!) is a belated step in the right direction for Apple, but even in that machine, a monochrome heart still pumps. Maybe Apple should look into a heart transplant. We're living in a color age — a fact that Apple still does not clearly see. 



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